AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

ORANGE JUDD COMPANY, PUBLISHERS AND PROPRIETORS. Office, 245 BROADWAY.

ESTABLISHED IN 1842.

Published also in German at same rates as in English.

TERMS: $1.50 PER ANNUM IN ADVANCE; 4 Copies for $5; 10 for $12; 20 or more, $1 each; 10 Cents additional must be sent with each Subscription for postage.—Single Number, 15 Cents.

Entered according to Act of Congress, in May, 1878, by the ORANGE JUDD COMPANY, at the Office of the Librarian of Congress, at Washington.

VOLUME XXXVII.—No. 6. NEW YORK, JUNE, 1878. NEW SERIES—No. 377.

CAPTURING WILD HORSES.— *Engraved for the American Agriculturist.*

It is generally admitted that the wild horses of our far Western plains descended from European stock. The term *Mustang*, applied to the wild horse in both South and North America, is a corruption of the Spanish *mesteño* (from *mesta*, pasture). In Mexico, and the portions of our territory bordering upon that country, the Mustang is still largely employed, though it is being rapidly replaced by better breeds. Large herds of Mustangs are found on the broad plains of the South-west, and their capture is still followed by both Mexicans and Americans. The usual method of capture is by the lasso, though sometimes, in favorable localities, they are taken by driving into an enclosure. The skill with which the Mexican throws the lasso, is often a subject of comment, but many Americans are quite as expert in this very useful accomplishment of the herdsman. In lassoing a wild horse, or other animal, the horse ridden by the hunter plays a most important part. The saddle is of great strength, and secured by girths correspondingly strong. One end of the lasso (usually 30 or 40 feet long), is made fast to the horn of the saddle, and when the rider makes his cast, which is done at a full gallop, and the noose falls upon the neck of the wild animal, the horse seems to take as much interest in the capture as the rider himself. When it is necessary to check the captive, the well-trained horse braces himself for the tussle, and renders essential aid. The writer traveled for some months in the region of wild horses, and though "sign" of various kinds was frequent, and our interest was greatly hightened by the wonderful stories told of them, not a drove, not even a single *caballo*, could we see, until at last the party concluded the wild horse to be a myth, and it was the subject of many a joke. Early one morning, a few days out from Corpus Christi, Texas, as we reached a crest of one of the great swells of the prairie, there were wild horses at last, and enough to make up for any former deficiency! As far as the eye could reach, were horses in every direction, in groups and droves—hundreds—no doubt thousands were in view at one time—a sight never to be forgotten! When we first saw them they were quietly grazing, but they soon saw us, and we then found that the wild horse was far from a "myth," and the meeting with them was very unlike a "joke." Perhaps the white covers of our train of a dozen or more 4 and 6-mule wagons attracted their curiosity, at all events they seemed to wish a nearer inspection, and down they came, in squadrons, regiments, and divisions, circling at full speed, nearer and nearer, their ample manes and tails giving an air of surpassing grace. We did not have long to admire the wonderful beauty of this scene. The mules, from their well-known sympathy with horses, became fairly excited, and soon were unmanagable. It was impossible to keep them in line, and though by firing at the wild horses with rifles and pistols, they took alarm and began to make off, the trouble then was that the mules would make off too! Then followed a "circus," compared to which the "Greatest Show on Earth" is a tame affair. Over 50 frantic mules, and a dozen or more equally frantic Texan teamsters, the mules with braying, trying to go in one direction, and the teamsters, with quite the reverse of praying, urging them to go in another, all emphasized by the *staccato* of the drivers' whips, might not be called a "Great Moral Entertainment," but was a very lively one. In the midst of it all, one

team—to our mess wagon at that—got beyond all control, and went on a full jump for several miles after the horses, before fatigue brought it to terms. The droves of wild horses disappeared as strangely as they came, and when the line of march was resumed, all hands were willing to admit that there were wild horses, but that it was not a good plan to hunt them with a train of mule-teams.

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Calendar for June.

Day of Month.	Day of Week.	Boston, New England, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Moon sets.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Moon sets.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Moon sets.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	S	4 25	7 30	8 40	4 31	7 25	8 33	4 36	7 19	8 27
2	S	4 25	7 31	9 32	4 30	7 26	9 26	4 36	7 20	9 20
3	M	4 24	7 31	10 17	4 30	7 26	10 12	4 35	7 20	10 6
4	T	4 24	7 32	10 52	4 30	7 27	10 48	4 35	7 21	10 44
5	W	4 24	7 33	11 23	4 29	7 27	11 20	4 35	7 22	11 17
6	T	4 23	7 34	11 49	4 29	7 28	11 47	4 35	7 22	11 46
7	F	4 23	7 34	morn	4 29	7 29	morn	4 34	7 23	morn
8	S	4 23	7 35	0 13	4 28	7 29	0 13	4 34	7 23	0 13
9	S	4 23	7 35	0 36	4 28	7 30	0 37	4 34	7 24	0 38
10	M	4 23	7 36	1 0	4 28	7 30	1 3	4 34	7 25	1 6
11	T	4 22	7 37	1 28	4 28	7 31	1 32	4 34	7 25	1 36
12	W	4 22	7 37	2 1	4 28	7 31	2 6	4 34	7 25	2 12
13	T	4 22	7 38	2 41	4 28	7 31	2 48	4 34	7 26	2 55
14	F	4 22	7 38	rises	4 28	7 32	rises	4 34	7 26	rises
15	S	4 22	7 38	8 47	4 28	7 33	8 41	4 34	7 27	8 34
16	S	4 22	7 39	9 29	4 28	7 33	9 24	4 34	7 27	9 18
17	M	4 22	7 39	10 2	4 28	7 33	9 58	4 34	7 27	9 53
18	T	4 22	7 39	10 29	4 28	7 34	10 25	4 34	7 28	10 22
19	W	4 23	7 40	10 51	4 28	7 34	10 49	4 34	7 28	10 46
20	T	4 23	7 40	11 11	4 28	7 34	11 10	4 34	7 28	11 9
21	F	4 23	7 40	11 29	4 29	7 35	11 30	4 35	7 29	11 30
22	S	4 23	7 40	11 48	4 29	7 35	11 50	4 35	7 29	11 51
23	S	4 23	7 41	morn	4 29	7 35	morn	4 35	7 29	morn
24	M	4 23	7 41	0 8	4 29	7 35	0 10	4 35	7 29	0 13
25	T	4 24	7 41	0 30	4 30	7 35	0 33	4 36	7 29	0 38
26	W	4 24	7 41	0 57	4 30	7 35	1 2	4 36	7 29	1 7
27	T	4 24	7 41	1 30	4 31	7 35	1 36	4 37	7 29	1 43
28	F	4 25	7 41	2 12	4 31	7 35	2 19	4 37	7 29	2 26
29	S	4 25	7 41	3 5	4 31	7 35	3 13	4 37	7 29	2 20
30	S	4 26	7 41	sets	4 32	7 35	sets	4 38	7 29	sets

PHASES OF THE MOON.

MOON.	BOSTON.		N. YORK.		WASH'N.		CHA'STON		CHICAGO.	
	D.	H. M.		H. M.		H. M.		H. M.		H. M.
1st Quart	7	11 11	ev.	10 59	ev.	10 47	ev.	10 35	ev.	10 5 ev.
Full M'n	14	7 7	ev.	6 55	ev.	6 43	ev.	6 31	ev.	6 1 ev.
3d Quart.	22	2 31	ev.	2 19	ev.	2 7	ev.	1 55	ev.	1 25 ev.
New M'n	30	7 47	mo.	7 35	mo.	7 23	mo	7 11	mo.	6 41 mo.

AMERICAN AGRICULTURIST.

NEW YORK, JUNE, 1878.

Hints for Work.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every paper, from the latest experience and observations, by practical men in each department.*]

Corn.—The present season is, in the country generally, probably the earliest on record Much corn was planted earlier than usual, and it is necessary to give extra attention to cultivation. Weeds grow rapidly in such a wet season as this, and should be kept down by frequent working. The forward season may cause growth of stalk at the expense of the ear. As a remedy remove the suckers from the root. A handful of superphosphate of lime applied about the hill now, will help the earing.

Haying.—There will be little hay cut in July this year, unless it is a second crop. Even at the North much has been cut already, and we must hasten to secure the rest before it is over-ripe. The grass and clover being very succulent, will need careful drying. Curing in the cock will greatly improve the quality.

Curing in the Cock, will require two or three days' time. The grass or clover cut in the forenoon may be raked up before evening and thrown into winrows. These may be left until the afternoon of the next day, when they may be thrown into tall cocks, containing about 300 or 400 lbs., and left one day and night to sweat. In this condition the hay ferments and heats, and the excess of moisture is driven off. This process ripens the hay, and improves it very much. After this curing, and a little airing, there is no danger of the hay heating in the mow or stack. To keep the cocks dry,

Hay Caps will be useful. These are made of a square of heavy sheeting (2 yards), with a strong cord on the edges, and having an eyelet hole at each corner. These are placed over the cocks, and tied down at each corner to pegs driven into the hay. They will turn a steady rain of 24 hours' duration, and keep the hay dry. These were described in an illustrated article in the *American Agriculturist* for June, 1876.

Fodder Crops.—A variety of these is better than any single one. Animals love variety, and a change of food is healthful and increases the appetite. Besides a number of well-tried fodder crops, we have some promising new sorts. Of the old ones, oats and peas, field corn, the large kinds of sweet corn, millet, Hungarian grass, and various root crops, furnish a large choice. Of the

New Fodder Crops, Pearl millet, Golden millet, Southern Cow-peas, and the large mangels, promise to be worth a trial. The two varieties of millet mentioned have yielded immensely, and as a crop for green or dry fodder, and for cleaning the soil, as well as for plowing under for manure, the Southern Cow-pea has been tried successfully. This pea is to be sown now, as soon as may be.

Roots.—Ruta-bagas and white turnips may be sown this month; of the latter, White Norfolk and "Cow's-horn" can be grown and pulled for fall feed in time to be followed by fall grain.

Waste Places may be utilized by plowing and sowing them to some late crop. Every acre and square rod should be made useful in some way, every farm has spots of this kind that could be made profitable, instead of remaining a nursery of weeds.

Cows are now in full flush of milk. As June butter is chosen for packing for winter use, care should be taken to preserve it from all imperfections. This care will be repaid by the better quality. Pure water, good feed, and clean management of the milk and cream, are needed to make the best butter.

Cellars are made damp by inconsiderate methods of ventilation. When a cellar is ventilated in the middle of the day, in an attempt to make it dry, the opposite effect is produced. The hot air is highly charged with moisture; cellar walls and floor are much cooler than the outside atmosphere, and when air is admitted in the day, moisture is deposited as dew on the floor and walls, to the disappointment of the owner. Cellars should therefore be ventilated at night, and kept closely shut up and dark in the day time, especially in hot weather.

Horses.—Fly-time has come, and unless some precautions are taken to rid the horses of their tormentors, they can not do a full complement of work. We find Buchan's carbolic soap, made into soap-suds with hot water, and sponged over the legs and shoulders, and left to dry on the skin, a very good preventive. Cleanliness and darkness in the stables, will contribute greatly to the comfort of the horses at this season.

Sheep.—The ewes and wethers should be tagged and kept free from filth. Many sheep are lost for want of this precaution, by becoming fly-blown. When the maggots have once gained a hold upon a sheep, there is no help for the poor animal; a horrible death—being literally eaten alive by the maggots—is its fate. This can be easily avoided by care.

Lambs.—Early lambs will now need some extra feed. A "lamb-creep," such as was described in the *American Agriculturist*, for April, 1874, will be found useful in supplying the means for feeding the young animals separately from the older ones. To wean lambs easily, turn them into a field, with a few dry ewes, out of sight of their mothers. The mothers will need close watching, lest their udders suffer from retention of the milk. Copious milkers should be relieved of the milk every morning.

Dipping Sheep and Lambs.—At this season, it will be advisable to dip the lambs at least, if not the sheep as well, to rid them of the hateful ticks. A very safe and effective dip is Buchan's Cresylic Sheep Dip, which not only kills the ticks, but cures and prevents scab, and greatly helps to prevent the fly-maggot above referred to.

Poultry.—Young chicks should be pushed ahead as fast as possible. If possible, a good run should be given them. They will do much good in the garden, if the hens can be kept out. A light netting, for separating chicks, dividing runs, or protecting the garden, will be found useful. Mr. H. H. Stoddard, Editor of the "Poultry World," Hartford, Conn., has provided means for supplying this want, and informs us that nets of any length and width can be made to order, at very reasonable prices. Those who have so frequently inquired about this kind of nets, will take notice of this.

To use these Nets, plant a few stakes, and run a wire from one end to the other of the row, at the top, and another at the bottom; then stretch the net, and tie here and there to the wires with twine.

The wires may be tied to the stakes with twine, but should be twisted around the end stakes, and these should be driven very firmly, and braced if necessary; but when put up in this way, there is very little strain upon the wires.

Swine.—A run in the orchard, especially if that is sown to clover, will be very helpful for young pigs. There is a mutual relation between orchards, clover, and pigs. The pigs thrive on the clover, and consume all the fallen and wormy fruit; the clover keeps the soil cool, mellow, and moist; and the trees are all the better for the improvement to the soil and the destruction of the insects.

Potatoes.—The potato-beetle has appeared in full force again. The mild open winter has not diminished its numbers. There is but one effective remedy, Paris green. It may be applied in mixture with water—a tablespoonful to a pailful of water—sprinkled on the vines with a whisk, or mixed with flour or plaster—one part to 30 or 50—and dusted on the vines.

Fence Rows.—It is a good practice to move the fences and plow up the fence rows, whenever fields are laid down to grass. We can then have clean fence rows, and get rid of what are nurseries of weeds and collections of trash. Our practice is to take down the fence, lay the rails conveniently on one side, and plow the land; if there are many roots in the ground, gather these to be burned. When the ground is sown, and all is complete, the fence is put up again. It is a very small job to do this once in five or ten years, compared with the convenience of having clean fence rows, which may be readily mown and made to yield a considerable quantity of hay—enough to pay the cost.

Buckwheat is not a very profitable crop, yet there are times and places when and where it may be convenient. Rough places, worn-out sod land, poor stubbles, and hills, may be made to produce buckwheat where little else can be grown. This crop has a good effect upon rough cloddy land, and mellows and softens the soil. Two to three pecks of seed per acre may be sown late this month, or early next. The "Silver Hull" buckwheat is a valuable improved variety.

Notes on Orchard and Garden Work.

The promise of a most successful season in every branch of horticultural production continued until May 13th with us near New York. In the Western States, a cold snap came earlier, and at that date severe frosts in the Eastern States caused much damage, but as we go to press on the 15th, we are unable to state the extent of the losses, which must be wide-spread and important.

Orchard and Nursery.

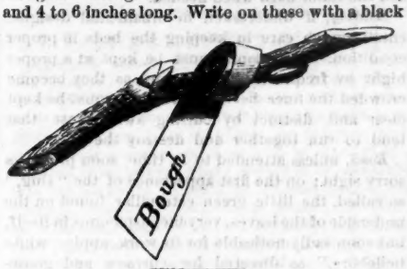
If tree planting was hurried—and it often is when other work presses—a little attention now may save young trees that might otherwise perish, and it will be well to go through all

Newly-Planted Orchards, and examine their condition before the drouths come. If a tree has been carelessly planted, it may lean to one side; a fault that merely pressing the soil with the foot will remedy. If a tree is a long while in starting, it needs mulching. We have advised that all trees be mulched at planting, but if this is not practicable for the whole orchard, the backward and unpromising specimens should by all means be so treated. See last month's remarks on mulching.

Labels are very convenient, but they often do much harm. Every tree in an orchard, or indeed elsewhere, should be known by its position, and unless a proper record was made at planting time, let it be done at once. Begin and number the rows, from one side, and then opposite the number of the trees in the row, write the name. A permanent record of this kind should be kept, and a copy for convenient reference may be made in a pocket memorandum book. With this, labels are not needed, and generally may be entirely dispensed with.

Labels from the Nurseries are not intended to be permanent. They are usually wired on carefully, the wire twisted tightly so that it may not come off. They are only intended as a guide to the purchaser until the tree is planted. Look to each tree, and be sure that no firmly fastened label remains; with a very slight growth, the tree may become injuriously strangled. If one prefers to have his trees labeled, let him make sure that the wire allows abundant room to grow. But

A Safer Label has no wire. Cut sheet zinc into elongated triangles, about an inch wide at base, and 4 to 6 inches long. Write on these with a black



ZINC LABEL.

lead pencil, and coil the point around a twig, as shown in the engraving. This makes a very permanent label; we have known it to be as distinct as ever for 25 years, and properly put on, they will not strangle. In putting on labels it is well to

Observe a System.—On every tree put them on the same side, N. S., etc., and at the same hight as near as may be, otherwise it will be difficult to find them among the foliage.

Grafts set this spring need to be kept watch of; often but one bud will push, and this send out a long vigorous straight shoot, which in heavy winds will be broken or pulled out. Pinch the tops of such shoots to make them branch. Indeed, treat a graft in a tree, as if it were a young tree planted in the ground. If shoots appear on the stock below the graft, break them off while yet young.

Thinning Fruit is Rarely Overdone.—The question of pay can only be decided by trial. If the market is a good one, and labor cheap, it will no doubt pay. If the fruit is marketed in a wagon body, and shoveled up to measure it, it will not pay.

Shoots from Buds put in last summer are to have the same care as those on grafts. They sometimes grow so vigorously, especially on peach trees, that a stake is needed.

Blight and other troubles that befall trees were mentioned last month, and there is nothing to add. This will be an especially busy month

With Insects.—Aside from those mentioned in former months, the borers generally lay their eggs. The perfect insect of the Peach-borer is a small moth, that lays her eggs just at or below the surface of the ground. Heaping up a low mound of earth, or of coal ashes, around the tree, has been found useful as a preventive. When the grub has entered, gum will be found oozing from the wound; the borer does not go much below the bark, and is easily cut out. The Apple-tree borer is a brown and whitish striped beetle with long feelers; this places its eggs near the base of the tree; sawdust from its boring, is a sign of its presence. Cut out, and use a wire if need be, as soon as discovered. The Codling moth worm leaves the fruit, unless that falls, and crawls around in search of a hiding place wherein to make its changes; cloths or hay bands fastened around the trunks catch large numbers; these traps should be examined every 10 days.

Fruit Garden.

Aside from the insects that attack ordinary orchard trees, some peculiar ones are found here. Currants and gooseberries are attacked by the currant worm. See last month for the use of *White* Hellebore for these, and about the attacks of the white grub on strawberries. Large caterpillars of several kinds, and beetles, will be found on grapevines, but rarely so numerous that hand-picking will not keep them in check. A slug-like caterpillar, green, slow, and slimy, often disfigures pear and cherry leaves. Dusting with slaked lime or dry ashes will soon rid the trees of it.

Currants and Gooseberries.—Much pruning in the fall may be avoided by removing shoots which push now where stems are not needed; they are easily pulled out. Generally the bushes are too full of wood and leaves for the most abundant fruit. In some markets both these fruits bring a better price when picked green—indeed, gooseberries are rarely sold otherwise. By heavy mulching, the fruit of the currant may be kept on the bushes a long while in good condition for table use. For jelly, currants should be gathered as soon as fairly colored.

Raspberries.—The wood, or canes, that *fruit* this year, will *die* the next, and the green shoots that are now growing, will bear next year's fruit. If more of these new shoots than are wanted start up, select three or four of the best to each stool, and treat the others like weeds. When the shoots for next year reach 3, or at the most 4 feet, stop them by pinching off the ends. The "Cap" varieties do not sucker, at a distance from the plant, but shoot up from around the base. Keep the new shoots shortened to make a neat bush 2½ or 3 feet high. Thus treated, they will need no stakes. We prefer to cut out the old canes as soon as picking is over.

Blackberries have the same manner of growth as raspberries, and shoots must be treated for next year's fruit. When they reach 5 or 6 feet, nip out the top, which will cause them to branch. Most of them are great wanderers, and all that come up where not wanted should be pulled up or cut off.

Grape-Vines.—Sufficient is said about the management of the young vine, especially, on page 222. In moist hot days, examine often for mildew, and on its first appearance dust sulphur freely.

Strawberries.—The treatment of the plants after fruiting will depend upon the plan of cultivation. In any case, the mulch should be removed, the soil between the rows forked over, and the weeds that have come up among the plants pulled up. Where the plants are kept in hills or single rows, the runners are to be cut off. In the alternate plan, the runners are allowed to take root in the spaces between the rows, and the old plants removed, later in the season, after the new ones are well established. New beds may be set from plants struck in pots, as soon as they are well rooted.

Kitchen and Market Garden.

The value of the rake as a weeding implement has often been referred to in these Notes, and at no time is its utility more manifest than now, when the hot weather brings the later weeds on in great profusion. With a long-toothed, wide rake, the surface can be stirred very rapidly, and this will so disturb the germinating weeds that the sun will soon finish them. The frequent use of the rake will save much hoeing. Last month's Notes will be timely in many localities for the present month.

Sowing for Succession must be kept in mind, as the season of many vegetables may be greatly prolonged. Bush Beans, Sweet Corn, etc., by sowing every ten days or two weeks, may be had until frost.

Asparagus should not be exhausted by too long continued cutting. The usual rule is to stop as soon as early peas are ready. Recent inquiries show that it is not generally understood that the crop of *next year* depends upon the growth of the tops *this season*, as we have been asked by several if they should not be kept cut off. This would completely *destroy the bed.* The growth of the foliage is of the greatest importance, as it provides for the buds for next season. Allow the tops to grow until the change of color shows that they have done their work; all weeds that appear should be pulled.

Beans.—If cold storms have injured the first planting of Limas, put in more seed at once. These usually need to be aided in taking to the poles at first. Bush sorts may be put in for succession.

Beets and Carrots.—Sow the main crop if not already in. Weed, and thin when large enough.

Cabbages and Cauliflowers are greatly helped by frequent hoeing. As soon as the early crops are off prepare the ground for celery and other late crops. The seed-beds of late cabbages should be kept free of weeds, and if slugs or insects attack them sprinkle with ashes or lime.

Cucumbers.—The main crop for pickles is usually

sown from the middle of this month to the first of next. For this purpose many prefer drills to hills. Furrows are made 5 to 7 feet apart, well manured, the manure covered with soil, and 12 to 20 seeds sown to the foot to allow an abundance for insects, covering an inch deep. If in hills, make them 6 or 8 feet apart each way, and drop about 20 seeds in each. As soon as the plants appear dust with ashes or air-slaked lime. When the vines begin to run, thin to three in a hill, or a foot apart if in rows.

Egg-Plants should not be put out until the weather is settled warm. They need abundant manuring and constant care to keep them from destruction by the potato-bug.

Melons.—Plant and treat as directed for cucumbers.

Onions require frequent weeding. Our most successful cultivators find a dressing of salt, at the rate of 3 or 4 bushels to the acre, applied when the plants are 4 or 5 inches high, of benefit. For a near market, half-grown onions, in bunches of 12 to 6, according to size, are more profitable than ripe ones.

Parsnips and Salsify are generally left too close in the rows; 5 inches for the one and 4 for the other will give much finer roots than if left nearer. Hoe until the leaves meet across the rows.

Peas.—Sow for succession, though in our hot summers they seldom amount to much.

Rhubarb.—Keep the flower stalks cut off.

Spinach.—The common sort runs up to seed in hot weather; the New Zealand Spinach, a very different plant, flourishes best in hot weather. The seed is uncertain; sow a plenty in warm rich soil, and thin or transplant to 3 feet apart. Beets make an excellent substitute for spinach, pulled before the root is thicker than a quill. The Spinach Beet, and Swiss Chard, are also useful.

Squashes.—The winter sorts should be planted as directed last month.

Sweet Potatoes.—Around New York, the early part of this month is soon enough. See May Notes.

Tomatoes in garden culture should always have some kind of support. Single plants may be neatly trained by a trellis made with three barrel hoops and three stakes. We have given numerous forms of supports in former volumes. The pea trellis given on p. 183, last month, is used, by the gentleman who proposed it, for tomatoes also. Whatever support is used, it should be in place early, as when the plants become large enough to fall over they are very unmanagable.

Sweet Herbs should be transplanted from the seed beds, from time to time, to fill vacant places.

Turnips of the Ruta-baga sorts may be sown at the last of the month or early next. The "Long French" is best for family use, though not large.

Odds and Ends.—Insects must always be attended to. The large green "worm" will make quick work with a tomato vine—hand pick it, for it neither bites nor stings; ditto squash bugs..... Slaked-lime, or ashes, or both, should be freely dusted on all young plants of the squash and turnip families....See Note last month on "Weeds and Weeders."..... If watering is to be done, do it thoroughly. A mere sprinkling is of little use.... Sashes no longer needed for hot-beds or frames should be carefully put away under cover——Straw mats are to be put away, when dry, in a dry place.

Flower Garden and Lawn.

In most localities planting is done, and there is but little on that subject to add to last month's Notes. Now comes the caring for that which has been planted, and many a novice will find that he has provided a difficult task for himself, and if he does the work himself, will determine to have another year more lawn and fewer beds. A small place well kept is vastly more satisfactory than a large one partially neglected. If one has a suitable locality, he should consider

A Wild Garden, which is now becoming popular in Europe, in which hardy plants can grow without any other care than to prevent the strong crowding out the weak. Of course a garden of this kind should not be in a conspicuous place. The surroundings of the house, whether limited or extensive, should always show careful keeping. And most important to this end is the care of

The Lawn and Paths.—The frequent use of the lawn-mower, persistent uprooting of perennial weeds, and the clean cutting of the margins, whether they border paths or beds, are all essential to the neatness of the grounds. Weeds must be kept from the paths, as well as the beds and borders, and the roller used when needed.

Bedding, if undertaken in ornamental designs, entails much care in keeping the beds in proper condition. The plants must be kept at a proper hight by frequent pinching, and as they become crowded the lines between the kinds must be kept clear and distinct by cutting away those that tend to run together and destroy the effect.

Roses, unless attended to in time, soon present a sorry sight; on the first appearance of the "slug," so-called, the little green caterpillar found on the underside of the leaves, very inconspicuous in itself, but soon sadly noticable for its work, apply "white hellebore," as directed for currants and gooseberries, under "Fruit Garden." This should be repeated every few days, as long as required. Then the Rose-bugs follow, for which hand-picking is the only remedy, and this is best done when they are quiet, in early morning. Take a tin cup with a little water in it, on which a few drops of kerosene are floating, and knock the bugs off into this. When flowering is over, cut away the clusters.

Fuchsias rarely do well in the open ground unless in a shaded place. They are best on the veranda.

Tuberoses should only be set out when the weather is settled warm, and have a rich spot.

Spring Bulbs, Hyacinths, Tulips, etc., should be kept growing until the leaves begin to fade; then take them up and spread under cover until the leaves are quite dry, when these are to be removed and the bulbs stored in a cool dry place until fall.

Annuals.—Sow for succession, and set out the tender kinds started under glass.

Sundry Matters.—Cut away the clusters from perennials and shrubs as soon as the flowers fade, unless seeds are wanted....Dahlias depend largely upon sticks and strings, are easily broken by storms, and need frequent care....Stakes will be needed by gladioluses, tuberoses, and other plants. They should be as inconspicuous as possible; if painted stakes are used, let them be brown or some neutral tint rather than green....If seeds are saved, select from the best always....Weeds and insects are to be constantly looked for and disposed of.

Greenhouse and Window Plants.

There is but little to add to last month's Notes. As the heat increases, more care in watering will be required by the plants set out, as well as those left in the house. Increase the shading if needed.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions *for the month ending May 13th*, 1878, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	323,000	3,417,000	2,109,000	396,000	405,000	581,000
27 d's *last* m'th	271,000	3,102,000	1,413,000	293,000	387,000	496,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	407,000	4,376,000	2,534,000	423,000	371,000	835,000
27 d's *last* m'th	326,000	3,491,000	3,105,000	412,000	563,000	619,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1878..	323,000	3,417,000	2,109,000	396,000	405,000	581,000
27 days 1877..	237,100	254,000	1,570,000	51,000	196,000	573,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1878..	407,000	4,376,000	2,534,000	423,000	371,000	835,000
27 days 1877..	319,000	1,072,000	7,149,000	62,000	93,000	1,570,000

3. *Exports from New York, Jan. 1, to May 9.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1878..	904,902	14,932,096	6,690,781	1,340,395	1,335,409	223,827	212,106
1877..	496,097	3,124,696	7,062,226	439,605	123,083	60,141	136,874
1876..	728,579	7,614,910	4,336,520	102,604	—	75,290	319,539

4. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
May 7, 1878..	748,196	263,020	75,229	207,576	570,298	258,327
Apr. 15, 1878..	1,370,081	541,648	106,375	396,861	857,278	253,424
Mar. 11, 1878..	1,639,371	420,484	114,260	660,145	1,090,897	275,705
Feb. 11, 1878..	1,674,085	774,470	208,846	831,673	1,415,633	318,079
Jan. 10, 1878..	2,596,715	105,909	286,333	913,898	1,687,985	321,474
Dec. 10, 1877..	2,844,982	1,721,229	399,077	864,787	1,879,032	358,849
Nov. 5, 1877..	994,374	2,648,502	166,949	366,429	1,170,759	328,388
May 7, 1877..	761,696	468,809	193,046	174,375	347,881	291,654
Feb. 7, 1877..	3,083,819	2,302,261	374,142	671,114	956,114	388,605
Jan. 8, 1877..	3,668,010	3,077,504	341,750	905,615	1,088,104	425,406
Dec. 11, 1876..	3,110,283	3,385,554	219,841	873,310	1,182,322	512,041
Apr. 10, 1876..	3,393,074	232,140	68,429	200,381	706,282	436,942
Jan. 10, 1876..	5,902,293	663,982	100,741	325,191	1,080,300	307,438

CURRENT WHOLESALE PRICES.

	Apr. 17.	May 13.
PRICE OF GOLD	100 3-8	100 1-2
FLOUR—Super to Extra State ₱ bbl	$4 15 @ 5 60	$4 10 @ 4 60
Super to Extra Southern	4 25 @ 7 75	4 10 @ 7 75
Extra Western	4 90 @ 9 00	4 60 @ 8 50
Extra Genesee	5 00 @ 6 25	4 75 @ 6 00
Superfine Western	4 15 @ 4 90	4 10 @ 4 60
RYE FLOUR, Superfine	3 10 @ 4 15	3 90 @ 3 75
CORN-MEAL	2 25 @ 3 15	2 25 @ 3 10
WHEAT—All kinds of White	1 35 @ 1 46	1 35 @ 1 42
All kinds of Red and Amber	1 00 @ 1 40	1 00 @ 1 38
CORN—Yellow	52 @ 57	50 @ 56
Mixed	45 @ 58	43 @ 56
White	50 @ 57	50 @ 57
OATS—Western	38 @ 40	32½@ 40
State	38 @ 40	38 @ 41
RYE	67 @ 75	70 @ 75
BARLEY	49 @ 90	46½@ 85
BARLEY MALT	65 @ 1 20	65 @ 1 10
HAY—Bale, ₱ 100 lbs	40 @ 85	40 @ 85
STRAW, ₱ 100 lbs	35 @ 65	35 @ 65
COTTON—Middlings, ₱ lb	10½@ 10¾	10¾@ 10¾
HOPS—Crop of 1877, ₱ lb	5 @ 10	5 @ 10
" old, ₱ lb	1 @ 3	1 @ 3
FEATHERS—Live Geese, ₱ lb	35 @ 47½	35 @ 47¼
SEED—Clover, West. & St'n ₱ lb	7 @ 7¾	7¼@ 7¾
Timothy, ₱ bushel	1 25 @ 1 40	1 25 @ 1 37½
Flax, ₱ bushel	1 45 @ 1 50	1 40 @ 1 60
SUGAR—Refi'g & Grocery ₱ lb	6¾@ 8¾	6 @ 8¾
MOLASSES, Cuba, ₱ gal	26 @ 38	22 @ 36
New Orleans, ₱ gal	30 @ 52	23 @ 50
COFFEE—Rio (Gold)	13¾@ 17	14½@ 17¾
TOBACCO, Kentucky, &c., ₱ lb	2¾@ 14	2½@ 14
Seed Leaf, ₱ lb	4 @ 50	4 @ 50
WOOL—Domestic Fleece, ₱ lb	25 @ 48	23 @ 46
Domestic, pulled, ₱ lb	20 @ 36	18 @ 35
California, spring clip	13 @ 28	12 @ 27
California fall clip	10 @ 19	10 @ 19
TALLOW, ₱ lb	7¾@ 7¾	7¾@ 7¾
OIL-CAKE—₱ ton	30 00 @31 50	30 00 @31 00
PORK—Mess, ₱ barrel	9 75 @10 25	9 30 @ 9 75
Extra Prime, ₱ barrel	8 50 @ 8 75	8 50 @ —
BEEF—Extra mess	12 00 @12 25	12 00 @12 25
LARD, in trcs. & bbls, ₱ 100 lb	6 75 @ 7 75	6 62½@ 7 17¼
BUTTER—State, ₱ lb	10 @ 35	10 @ 23
Western, poor to fancy, ₱ lb	8 @ 36	7 @ 23
CHEESE	5 @ 13¾	4 @ 11½
EGGS—Fresh, ₱ dozen	9 @ 11	10½@ 13¾
POULTRY—Fowls, ₱ lb	8 @ 13	9 @ 15
Chickens, ₱ lb	20 @ 50	20 @ 28
" ₱ pair	— @ —	50 @ 1 25
Turkeys—₱ lb	8 @ 16	10 @ 17
Geese, ₱ pair	1 12½@ 2 00	75 @ 1 50
Ducks, ₱ pair	60 @ 1 12	60 @ 1 12
" ₱ lb	12 @ 20	— @ —
Roosters, ₱ lb	5 @ —	6 @ 8
Capons, ₱ lb	— @ —	25 @ 32
APPLES—₱ barrel	2 50 @ 4 50	2 75 @ 6 00
PEANUTS, domestic, ₱ bush	85 @ 1 40	85 @ 1 40
STRAWBERRIES, ₱ quart	20 @ 50	20 @ 30
CRANBERRIES—₱ bbl	6 50 @ 8 50	6 00 @ 9 00
" ₱ crate	1 50 @ 2 50	— @ —
ORANGES, Florida, ₱ bbl	4 00 @ 7 00	— @ —
RADISHES, new, ₱ 100 bun	50 @ 1 25	50 @ 1 25
PEAS—Canada, in bond, ₱ bu	83 @ 84	82 @ 82
green, ₱ bush	1 12½@ —	1 05 @ 1 10
" new So., ₱ crate	1 25 @ 2 25	50 @ 75
" " ₱ bbl	— @ —	4 00 @ 5 00
POTATOES, new, ₱ bbl	5 00 @ 6 00	3 00 @ 7 00
" ₱ crate	1 50 @ 1 75	— @ —
POTATOES—old, ₱ bbl	1 00 @ 1 50	1 00 @ 1 50
SWEET POTATOES—new ₱ cte	— @ —	50 @ 1 25
BEETS, ₱ bbl	60 @ 75	— @ —
" Bermuda, ₱ crate	75 @ 1 50	1 00 @ 1 25
TURNIPS ₱ bbl	25 @ 50	25 @ 62½
" white, ₱ 100 bunches	— @ —	1 50 @ 2 00
BEANS—₱ bushel	1 25 @ 2 85	1 50 @ 2 60
BROOM-CORN	4 @ 7½	4 @ 7½
SPINACH, ₱ bbl	1 00 @ 2 50	50 @ 75
KALE, ₱ bbl	75 @ 1 00	35 @ 60
TOMATOES, ₱ box	75 @ 1 00	50 @ 80
CABBAGES—₱ 100	— @ —	5 00 @10 00
" new, ₱ bbl	— @ —	50 @ 1 75
ONIONS—₱ bbl	75 @ 1 75	1 25 @ 3 50
" ₱ crate	2 00 @ 6 00	— @ —
CARROTS, ₱ bbl	50 @ 75	— @ —
RHUBARB, ₱ 100 bunches	— @ —	75 @ 2 00
ASPARAGUS, new, ₱ doz. bun	3 50 @ 5 50	75 @ 1 50
LETTUCE, ₱ bbl	2 00 @ 3 00	1 50 @ 2 50
SQUASH, ₱ bbl	2 00 @ 2 50	1 25 @ 1 75
STRING BEANS, ₱ crate	— @ —	1 50 @ 3 00
WATERCRESSES, ₱ bbl	— @ —	2 00 @ 3 00
CUCUMBERS, ₱ crate	— @ —	2 00 @ 4 75

Gold has been up to 100¾, and down to 100⅛, closing May 13, at 100½, as against 100¼ on April 17th; 102⅛ on January 12; 103 on December 12; 102⅝ on November 12; 103 on October 12; 105⅜ on July 12; 104⅞ on June 12; 107¼ May 12, of last year.....Breadstuffs have been quite freely dealt in, during the month, largely on export and speculative account, but at variable prices, closing, generally, with more firmness. The export movement in No. 2 Chicago (mixed) Oats has been on a liberal scale, mainly for France and Belgium. The opening of the Canals, and the general resumption of inland navigation have served to augment the available supplies of Flour and Grain, especially the latter, and with the very favorable crops and weather reports, have tended to depress prices. In the line of Provisions, business has been less active, and on the basis of reduced figures, in most instances. Hog products have been pressed for sale, with more than usual eagerness. Butter and Cheese have declined materially, and close weak. ....A very moderate demand has been noted for Hops, Seed, and Tobacco, within the previous range....Cotton has been rather more sought after, closing stronger ... Wool has been offered freely, and quoted lower, without stimulating operations, which have been on a moderate scale....Hay and Straw steady, but not active....Ocean freights have shown more animation, but at irregular rates, leaving off more steadily....Grain rates by steam to Liverpool closed May 13th at 8*d.* (about 16 cents) per bushel; Glasgow, 8½@9*d.*; London, 7⅛@8*d.*; Bristol, 9*d.*; Hull, 8½*d.*; the Continent, 7(@9*d.*; by sail to Liverpool, 7@7½*d.*; London, 7(@7½*d.* ₱ bush. Flour to Liverpool, by steam, 2*s.* 9*d.*@3*s.* (about 66 cents ₱ bbl.); by sail at 2*s.*@2*s.* 1½*d.*; London, 2*s.*@2*s.* 1½*d.*, and by steam, 2*s.* 6*d.*@2*s.* 9*d.*; Bristol, by steam, 3*s.*@3*s.* 3*d.*, and sail, 2*s.* 4½*d.* per bbl. Provisions by steam to Liverpool,

32s. 6d.@40s. per ton. Cotton by sail ¼d., and steam ⅛d. ℔ lb. Grain, by sail, for Cork and orders, at 6s.@6s. 1½d. per quarter, (8 bushels), and to Continental ports, 5s. 4½d.@6s. 6d.; Italian ports, 5s. 6d.@6s.; and from Phila. for Cork and orders, 6s.@6s. 3d., and from Balt. for Cork and orders, 6s.@6s. 3d., and from Phila. for Lisbon, by sail, in bags, 15@15½ cts. per bushel.

New York Live-Stock Markets.

WEEK ENDING	Beeves.	Cows.	Calves.	Sheep.	Swine.
	RECEIPTS.				
Apr. 22	9,349	89	3,635	20,100	30,517
Apr. 29	10,238	25	3,988	19,881	29,931
May 6	10,768	31	4,879	24,831	32,966
May 13	11,379	57	4,177	21,470	27,955
Total for 4 Weeks	41,734	205	16,729	86,282	121,369
do. *for prev.* 5 Weeks	50,271	390	8,883	97,934	148,724
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	10,138	51	4,182	21,570	30,442
do. do. *last Month*	10,055	78	17,66	19,590	29,745
do. do. *prev's Month*	9,060	132	903	21,679	34,918

Beeves.—Business has been marked by a gradual improvement, both in the demand and in the prices; a gain of one cent a pound having been made on the whole, notwithstanding the continued increase in receipts. The quality of the stock offered has also been better than usual; some Colorado steers brought 10c. ℔ lb for 56 lbs ℔ cwt., and some Texans 9¼c. The Texan drive this summer will be both larger and better than usual, estimates being made of 300,000 head, and the early grass having brought the stock into fine condition. At the close, prices were firm at the advance; a few extra good cattle, 58 lbs. to the cwt., sold for 11¼c.; Prime steers, 57 lbs. to the cwt., 10¾@11c., and fair natives and good Texans, 56 lbs. to the cwt., brought 9½@10¾c. ℔ lb. The foreign shipments reached over 1,000 head per week.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Apr. 22	8 @11 c.	8¾@ 9¾c.	9 c.
Apr. 29	8¾@11 c.	8¾@10 c.	9¼c.
May 6	8¾@11 c.	9¼@10 c.	9¾c.
May 13	8 @11¼c.	9½@10¼c.	10 c.

Cows have been dull and slow of sale, no good offer being refused. Prices of common cows are $30@$40, and of good ones $50@$65 per head; some very good animals were sold at the last price....**Calves.**—The market, after being weak for the best part of the month, improved along with beef, and became strong and higher. Best N. Y. State veals sold for 6½@7c., and the poorest buttermilk calves brought 4c. ℔ lb....**Sheep and Lambs.**—A marked improvement has occurred in this class of stock generally. Good sheep have been in good demand, unshorn sheep ranged from 6 to 6¾c. ℔ lb., and clipped brought 4¾@6c. ℔ lb. Lambs have been lower than ever before known; 6¾c. ℔ lb. for Ohio; 8@8¾c. for Virginia, and 8c. for N. Y. State, having been the rates at the close. As low as $1.75 to $4 per head was paid for many....**Swine.**—With pork down to $9 per bbl.—lower than for 30 years—hogs have done well at 3¾c. ℔ lb for live; dressed have fallen during the month, and closed at 4¾c. ℔ lb. Pigs brought 4¾@5c. ℔ lb.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	19.00@ 21.00
Linseed-oil-cake, western, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℔ ton	$56.50
do. do. Lobos, do. do. do	47.50
do. do. guaranteed, ℔ ton, cargo F	56.00
do. do. rectified, per ton, 9.10 p. c.	69.00
do. do. do. do. 3.40 p. c.	51.00
Soluble Pacific Guano, ℔ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone,	55.00
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
do. Spring Wheat Manure, ℔ 1,000 lbs.,	25.00
do. Fruit and Vine Manure, do.	17.50
do. Bone, strictly pure, meal ....per ton.	42.00
do. do. do. extra fine.... do.	40.00
do. do. do. fine..... do.	38.00
do. do. do. medium..... do.	36.00
do. Lawn Top Dressing..... do.	60.00
do. Potato Manure, (Ville Formula).. do.	31.94
Stockbridge Corn Manure, per acre	20.00
" Potato do do	10.00
" Tobacco do do	50.00
" Rye do do	10.00
" Wheat do do	15.00
Bowker's Hill and Drill Fertilizer, per ton	45.00
Gypsum, Nova Scotia, ground, per ton	8.00
Nitrate of Potash (95 per cent.), per lb	9¼c.
Sulphate of Potash (actual potash 44 per cent) per lb	4 c.
do. do. (actual potash 27½ per cent) per lb	2 c.
German Potash Salts (actual potash 12 to 15 p. c. p. ton	$18.00
Muriate of Potash (actual potash 50 per cent), per lb	2½c.
Nitrate of Soda, per lb	4¼c.@ 4¾c.
Sulphate of Ammonia (25 per cent.), per lb	4¾c.@ 5¼c.
Dried Blood or Dried Meat (ammonia 14 per cent) p. ton	$55

Conn. Agr. Experiment Station—Bulletin No. 11.—May 11, 1878—Analyses: No. 118—*Nitrate of Soda*, guaranteed 95 to 96 per cent, by H. J. Baker & Co., N. Y. City. Sampled by W. S. Baldwin, Naugatuck, Conn.—Moist condition.

No. 120—*Peruvian Guano*, from Chapman & Van Wyck, N. Y. City; sampler J. N. Bishop, Plainville, Ct.

No. 121—*Pulverized Bone.*—Refuse from Baking Powder Factory. Bought of Lombard & Matthewson, Warrenville, [Ct.?] Sampled by J. D. Gaylord, Ashford.

No. 122—*G. B. F. Superphosphate*, (English?) guaranteed 14½ per cent soluble Phosphoric Acid. From H. J. Baker & Co., N. Y. City; sampled by L. S. Wells, New Britain, Conn. [We suppose all the samplers were supplied by the purchasers.—Ed. *American Agriculturist.*]

	Nos. 118	120	121	122
		Percentages.		
Nitrogen	15.58*	8.76	.06	none.
Soluble Phosphoric Acid	—	5.62	.01	14.96
Reverted Phosphoric Acid	—	5.01	.89	.19
Insoluble Phosphoric Acid	—	2.98	1.53	.07
Potash	—	2.91	—	—
Sulphate of Lime, (plaster)	—	—	75.59(?)	—
Moisture	3.71	—	—	—
Undetermined	0.79	—	—	—
Calculated value	$74.73	$67.04	$10.82	$29.09
Cost	$80.00	$50.00	$20.00	$29.00

* Equivalent to 95.50 of Nitrate of Soda (about as sold for.)

Cocoa and Chocolate.—While coffee and tea allow of various adulterations, these may usually be avoidable by the careful purchaser, but Cocoa, when made up in the form of Chocolate, the cocoa beans being ground to a paste by the aid of heat, can be largely adulterated with materials which can only be detected by a chemical examination. Sugar is desired by many, and this can hardly be regarded as an adulteration, but starch in some of its many forms, plaster, and chalk, are often used to add weight, and red-ochre, umber, and other earthy paints are added to give the proper color. As chocolate and other such preparations are frequently advised for invalids, it becomes especially desirable that it should be pure. The only real safety for the purchaser is in the integrity of the maker of the article. Since our earliest recollections, the name of Baker has been identified with cocoa and chocolate of the best quality. In Europe it is not uncommon for a business to remain in a family for many generations, but such cases are rare with us, and the Bakers are a remarkable instance of the long continuance of a business under the same name, their cocoa and chocolate manufacture having been carried on for within two years of a full century. The present firm, Walter Baker & Co., while adopting modern improvements, maintain the early reputation of the name, by the excellence and purity of their products, and the purchaser feels sure that the name is a guarantee that the article he buys is exactly as represented.

Changes Which Bring Strength.

Mr. Judd's "Silver Wedding."

If ever a man was *wedded* to any pursuit, Mr. Orange Judd has been to that of Editor and Publisher of the *American Agriculturist*. And it is no stretch of propriety to say that in marking the 25th Anniversary of his connection with this paper, he celebrated his "Silver Wedding." Probably there is no other paper between which and its readers there exists such a peculiar personal relation, as between the *American Agriculturist* and its constituents. This was so noticable long ago, that it has been very common for us to speak of the "Great Agriculturist Family," and this has of late been manifested to a degree as marked as it is gratifying, in the many hundreds of letters that have come to us with the renewed subscriptions for the present year.

This Pleasant Relation

between Publishers, Editors, and Readers, is largely due to the fact that we have told our friends more about our business successes, our hopes and our future plans, than is customary; we are sure that this has not been without its good effect, in making its readers feel a greater attachment to and confidence in the Journal. Twenty-five years does not seem such a very long time, but when we say that

A Quarter of a Century Ago,

Mr. Judd allied himself with the *American Agriculturist*, and has devoted to it "a quarter of a century" of hard work (which measured by the work of most men, will count a rounded *century*), it will be admitted that he might properly celebrate his "Silver Wedding" with the paper. We can not now review the many changes that have taken place in these 25 years, at the beginning of which, the circulation was numbered by hundreds, instead of the many tens of thousands it now enjoys—when it was read mainly in a few adjacent States, instead of, as now, in every land where the English and German languages are read and spoken. At the present moment *the future* of the *American Agriculturist* is of more consequence than the past, and we with pleasure announce that Mr. Judd celebrates his

Twenty-fifth Anniversary,

by instituting such changes as can not fail to add greatly to the future prosperity of the "Company," and *usefulness* of the Journal. Mr. Judd's brother,

The Hon. David W. Judd,

who has had a wide and varied experience as a journalist, will now assume an active part in the business of the concern. The business force is still further strengthened by the addition of

Mr. Wm. R. Beckwith,

a gentleman who has had abundant experience in the publication of one of the most successful special, or trades journals of the day, and who will hereafter devote himself to the business of the Orange Judd Company. The occasion was marked not only by strengthening the *business* force, but the *editorial* corps is not omitted in the general improvement.

Mr. Edgar H. Libby,

was brought up a farmer, and, after receiving a thorough education in the sciences relating to agriculture, founded the "Scientific Farmer," and until recently was the Managing Editor of that excellent Journal. Mr. Libby will hereafter devote himself to similar duties on the *American Agriculturist*. We make these announcements with all the more pleasure because they are

Additions, rather than Changes.

While "young blood" and fresh energy are added to each department, no efficient member of the force has departed. The business is so large and so varied—and this remark applies to the editorial as well as to the business department—that each one was, formerly, not only overworked, but was obliged to attend to an immense variety of details. These very strong additions to both departments, allow each one, as has never before been practicable, to devote himself to those business or editorial duties for which he is best fitted; and while those who have borne the "brunt of the battle" these many years, do not propose to relax any of their efforts, they hope, by devoting themselves more exclusively to special departments, to make their work more effective. We have given these announcements that our many friends—and no paper ever had more and better—may see that the rounding of a quarter of a century is marked, not by a recital of what has been done in the past, but by immediate arrangements for the more complete accomplishment of the work of

The Next Quarter-Century

of the American Agriculturist. It long ago became "an institution," and the most fitting manner in which Mr. Judd could celebrate the 25th anniversary of his alliance with it was, to place it in every respect upon even a firmer basis than ever before, so that its permanence or its usefulness may not depend upon the health or the life of any one person or of several persons engaged in its different departments. Let no one infer that the new arrangements involve the retirement of Mr. Judd. We have figuratively referred to his alliance with the *American Agriculturist* as "a marriage," and this, like all true marriages, was "for life," but they will essentially relieve him from many cares, and really allow him to become more efficient, as he can now put forth his energies in whatever direction they may be most needed. EDITOR.

A Welcome Visitor to our desk, and to scores of thousands of homes, is the *American Agriculturist* for June 1, which comes to us as bright and breezy as the season, and as prolific in suggestions and instructions in the "How to Do," as the month is in vegetation. There are timely articles on haying, and general field, garden, and orchard work. The Humbug Column is strong and fearless in warning people against various swindles; "Among the Farmers" and "Talks on Farm Crops" are always readable. Dr. Thurber's illustrated horticultural articles, new Irises, the striking Greig Tulip, and his "Notes from the Pines," are full of interest and valuable suggestions. American Roadsters; Norfolk Polled Cattle; Cow Milkers; Plan of Small Stable; Ponds for Black Bass; Catching Wild Horses, are prominent features. Keeping Meat in Hot Weather; Care of Children's Feet; Earth Closets; Household Recipes, are of value to the housewife. The Young Microscopists' Club this month are studying plant diseases, parasites, flies, and bees. Aunt Sue gives pretty designs in housewifely arts. The Doctor tells about the Telephone. Some Curious Birds finish an interesting number. Price 15 cts.; $1.60 a year. ORANGE JUDD CO., New York.

A Journalistic Silver Wedding was celebrated by ORANGE JUDD, on the occasion of the 25th anniversary of his connection with the *American Agriculturist*, by the introduction of new, vigorous, and competent workers in both the editorial and business departments, in the persons of Hon. DAVID W. JUDD and Mr. WM. R. BECKWITH, each of whom have had considerable journalistic experience, and Mr. E. H. LIBBY, founder and late editor of the *Scientific Farmer*. Mr. JUDD, Dr. THURBER, and the other efficient associates continue active work—the changes being additions rather than an exchange of workers, for the purpose of strengthening the *American Agriculturist* in character and circulation, if that be possible in a journal which now visits so many scores of thousands of country homes.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, $1.60 a year; *Two* Copies, $3; *Three* Copies, $4.20 ($1.40 each); *Four* Copies, $5.20 ($1.30 each); *Five* to *Nine* Copies, $1.25 each; *Ten* to *Nineteen* Copies, $1.20 each; *Twenty* Copies and upwards, $1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, *except* to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 36 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid.....**Remittances**, payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss..**Bound Volumes** from Vol. 16 to 36 inclusive, supplied at $2 each, or $2.30 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (30 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 21 years past, sent post paid for 15 cents each; or *any* full year, sent unbound, for $1.60.....**Clubs** of Subscribers can be increased at any time, at the club rates, if new members begin at same date as original club.

Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the German *American Agriculturist*, and thousands of *new* subscribers are taking it this year. It contains not only the Engravings and all the essential reading matter of the American edition, but an additional *Special German Department*, edited by the Hon. Frederick Münch, of Missouri, a skillful and successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued; no other contains so much useful information and so many engravings. Germans are a *reading, thinking* people, and know how to make good use of what they read. Many Americans supply it to their German laborers and gardeners; all would find it pay to do so.—*Nothing else can compete with it in cheapness of price for the same amount of material, engravings, etc.*, because the expense of collecting and making these is largely borne by the American edition, and no separate office or machinery is required beyond German editors and the printers. Its terms are the same as the American edition, singly and in clubs; and clubs can be composed of subscribers for either edition in whole, or in part.—☞ *Please call the attention of your German neighbors* to this paper. It will do much to help new comers to a knowledge of the system and modes of culture used in this country.

A Good Appointment.—The Commissioner of Agriculture has appointed C. V. Riley, who has been for the past 10 years State Entomologist of Missouri, the Entomologist of the Department of Agriculture. Judging from his past, we have reason to expect much useful work from Prof. Riley. The only regret attaching to the announcement, is, that the letter which brings it, also informs us that our old friend Townsend Glover, who occupied the position, has quite broken down in health, and it is feared that his working days are over.

Reliable Business Men, those who have both the *ability* and the *intention* to do what they promise, are the only ones invited to use the business-pages of this journal, and those in charge of that department are under positive instructions to admit no others at any price, and they try to live up to it, and generally do, though once in a while they may make a mistake—to err is human—but *this* seldom occurs. We could make a fortune in a single year, and supply the paper at lower rates, if the advertising pages were thrown open to those who gladly pay high prices, as they can afford to, because they give little for much. But we mean our advertising pages shall be a valuable source of *trustworthy* information to our readers.—When ordering from, or corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of this Journal. They will know what we expect, and what you expect of them as to prompt and fair treatment.

The Winchester Repeating Arms Company, one of the most successful and extensive companies in this country, have leased and fitted up in very fine, attractive style, the ground-floor of the American Agriculturist Building, extending back 114 feet from Broadway, and including the L upon Murray street. Any of our readers visiting the city will be well repaid for a visit to this fine establishment. The Publishers of the *American Agriculturist* occupy nearly the entire first floor above, in four rooms, for General Offices, the Basement for mailing and packing, the fifth floor for editorial rooms, etc., and the sixth floor for printers and engravers. A cordial invitation is always extended to all our friends and subscribers to drop in and see us, whenever visiting the City. The Editors spend much of their time at their various country places, but some of them are usually here a portion of each day. The electrotyping is done at the large establishment of Messrs. Lovejoy & Son, on Vandewater St., and the presswork and folding in the great printing-house of S. W. Green, on Jacob St.

Paris Green.—From inquiry among the manufacturers and dealers, we learn that there are sold in the New York market alone, over 500 tons of this poison annually. One establishment alone, that of F. W. Devoe & Co., sold last year over 150 tons. Nearly all of this is used on the potato crop.

The Frost.—We go to press before full reports come to hand of the effects of the cold spell about May 12th. The area visited by it is unusually wide, and its effects, especially upon tender garden-plants, in most localities disastrous. To what extent the staple grain and fruit crops have suffered, we have yet to learn.

The Tribune's New Printing-Press is one of the most interesting objects to be seen in New York City. In a small compact space stands a machine that draws a wide strip of paper from a continuous roll, prints two copies at a time on both sides, gathers and *folds* the sheets ready for mailing, and drops them out at the rate of four to five in each second, or 15,000 an hour! All this is done by the machine itself, without the intervention of human hands, except to turn on or shut off steam with a little lever. Any one happening in the city in the early forenoon of any Wednesday should drop in at the Tribune building and *see* the press in operation.

Advertising Agencies.—Mr. J. H. BATES has taken the large rooms in the New York Times Buildings, formerly occupied by Geo. P. Rowell & Co., and fitted them up finely, and has a well arranged collection of all the newspapers of the entire country. With the advantages here offered, and also at the excellent establishment of S. M. PETTINGILL & Co., so long and favorably known to the press of the country, and which is close at hand, every possible facility can be found by business men who may wish to use the advertising columns of any or all the newspapers and other periodicals issued in America.

The Amer. Pomological Society's Report of the meeting at Baltimore in 1877 greatly exceeds in size, fullness, and usefulness, any of the former excellent volumes. Including the catalogue, it comprises over 200 ample pages, and bears throughout, the evidence of the industry and thoroughness of Col. Wilder, Mr. Barry, Mr. Flagg, the late lamented Secretary, and other faithful workers, and is a volume which is creditable not only to the Society but to the country. The Proceedings are richly worth the membership fee of $4.00.

Cheap Watches.—Watches are advertised at $3 and upwards. We have not heard of any one's getting a $3 watch, though we have seen excuses why they were not sent, and promises to fill the order from the "next lot received." Any one of common sense knows that there must be a limit to the cheapness of a watch that will keep time; the cheapest watch must have a spring and gearing, or "train," must have a face and hands, and the whole must be enclosed in a case.—Of course, if these parts are servicable, no matter where they are made, there must be a point below which the cost can not go. Several weeks ago, Messrs. J. S. Birch & Co. brought us a watch, taken at random from their stock, which they wished us to carry in comparison with our own watch or any other time-keeper. This watch has a case nickel-plated on German silver; beveled crystal, is a stem-winder and a stem-setter; the works, which have a neat look, though not highly polished, are covered with a glass shield, to keep out dirt, and there are, if we mistake not, six holes jewelled. The watch, which is a very presentable one, is called the "Centennial," and has this and a Maltese Cross on the back as a trade mark.—We are thus particular in mentioning the trade mark, as another concern has adopted the name "Centennial" for a very different watch with another device in place of the Maltese Cross. Messrs. Birch & Co., knowing the deception there is in cheap watches, preferred to have theirs tested before offering them. We can only say that the one left with us for trial has thus far proved a most satisfactory time-keeper.

The Death of Prof. Henry.—As we are closing these pages, the sad intelligence comes to us of the death of Prof. Joseph Henry, Secretary of the Smithsonian Institution. We can only say that not only America, but the world, loses one of its first scientists; there are few remaining whose lives offer so marked an example of pure devotion to science for its own sake. His admirable administration of the Smithsonian greatly contributed to "the diffusion of knowledge among men," while his important investigations and discoveries have made the world his debtor. It was his discoveries in electricity which made the telegraph possible; he established very many important scientific principles, and freely allowed inventors to turn them to profit. He never had time to make money. * * * Since the above was in type, we learn that the Regents of the Smithsonian have elected Prof. Spencer F. Baird, for many years Assistant Secretary, to fill Prof. Henry's position. The best possible thing they could do.

The Umbrella in Agriculture.—It is said that a soldier hired himself to a farmer to dig his early potatoes; after a hearty breakfast, on a hot August morning, the new help seated himself in the shade of the barn, saying to the farmer, "Now, if you want your potatoes dug, bring them along."—We can not all dig our potatoes in the shade, but there is much exposure to our intense mid-summer heat, that may be, and should be avoided, not only as a matter of comfort, but of health. Sunstrokes are more frequently heard of in cities, as there every casualty of the kind goes at once into the papers, while the same percentage of sunstrokes, in a population scattered over a county or two, would scarcely be heard of. We often see a kind-hearted farmer arrange a shade for his horse, while he forgets himself. Of course, most of the active work of the farm must be done under full exposure of the sun, or at least with only the protection afforded by the broad brim of a straw hat. [Mem. do not forget to put a cabbage leaf in that hat]. But in riding, whether upon the mower or reaper, or upon an open wagon along an unshaded road, a full exposure to the noon-day sun can be, and should be avoided. He must be deficient in ingenuity, who can not "conjure up" some screen which shall break the force of the sun, upon the head, at least. These remarks

were suggested by the announcement by Wm. A. Brown & Co., the great Philadelphia manufacturers of umbrellas, that they make a "Wagon Umbrella," especially for farmers, which may be applied to open vehicles of all kinds, including the mower, reaper, sulky cultivator, and other "riding implements." The use of umbrellas by omnibus drivers, truckmen, cartmen, and other drivers, is now very common in cities, and farmers may take the hint from these, and use a wagon umbrella, or other shade, wherever it is practicable.

Waltham Watches.—The Amer. Watch Co. call attention to their new model watch which embodies all the improvements of several years, and which they regard as superior to former styles—however good they proved to be. They are sold by the trade, generally.

To You Gentlemen in Congress.—You have arranged some matters concerning the postal law most beneficially. Other matters are very indefinite, and subject to all sorts of rulings. Here is an example: A farmer in Illinois finds that his seed-corn is destroyed about as fast as he can plant it. The farmer probably labors under the impression that the mail is for the benefit of the people, so as one of the people, he whittles out a neat 6-sided stick, bores a hole lengthwise, puts the insects into the cavity thus made, and closes the opening with a common cork. This is received at his office as 3d class matter. When it reaches us, we are charged 16 cents, because the contents can not be examined. Cases of this kind occur almost daily. The farmer is deprived of the use of the mail if he would send insects, unless letter postage is paid, while the merchant can send samples and haberdashery by the pound. We suppose that postmasters follow what they understand to be the *law*, but would it not be well to see to the law, so that farmers can receive quite as much benefit from what is called in England the "parcel post," as any other class. As it is now, farmers and naturalists are "left in the cold."

A New Work, Veterinary Obstetrics.—The periods of gestation and parturition are highly important to the owners of valuable domestic animals, as thousands of young animals or dams are lost yearly by mishaps, of which perhaps the mysterious abortion epidemic is by far the most serious. Hitherto stock owners could have no aid, but through (with but few exceptions) a notoriously defective and inefficient veterinary profession. Fortunately, some means of help is now at hand in a new work on Veterinary Obstetrics, by the well known writer, Professor Fleming, of England. This valuable book is profusely illustrated, and complete in details, and we have studied it with great interest. It is necessarily an expensive book, but is worth many times its cost to any owner of but one really valuable breeding animal. A few copies have been received by the Orange Judd Company, which can be supplied at once; others can be procured by ordering them. The price is $15.00, mailed free.

Cotton Manufacture at the South.—A circular issued by W. H. Oliver, of Newbern, N. C., gives some figures as to the cost of the machinery needed to furnish a cotton factory, and the cost of the supply of cotton in the South. Machinery capable of spinning 1,500 lbs. of lint-cotton daily, will cost about $13,000, exclusive of a building 50×100 feet, and two stories high, with an engine of 75-horse power. By a new process, known as the Clement attachment to the gin, the seed cotton is prepared directly for the card at a cost of 10½ cents per pound against a cost of 14 cents at ordinary factories. In addition, there is left 3,200 lbs. of cotton-seed, which is valuable for its product of oil and seed-cake. The advantage of a Southern locality for this manufacture is very clearly presented in the circular.

Toe and Heel.—A man wears out his shoes at the heel or at the ball of the foot, while a child's shoes are first "stubbed out" at the toes. Just when this transition takes place, from toe-wear to heel-wear, we are not prepared to say, but it is a question of more practical importance than many over which philosophers cudgel their brains. We have had a great variety of contrivances to prevent wearing away the heel, and within a few years there have been introduced "tips" for the toes. If a foreigner were to read the sign in Summer St., Boston, of "The American Shoe Tip Company," he might say sarcastically: "In the name of the Prophet—Figs!" "A company, for Shoe Tips, and an American Company at that—here's another Yankee notion."—It is a "Yankee notion,"—and a very good "notion" at that. Childrens' shoes are sold by millions; if a slight "notion" put to each shoe, will make it—as we have abundant evidence that it does—wear twice as long as the shoe without the "notion," the affair is not so trivial as it might seem, and as this interests every family where there are children in the broad land, the company may properly call itself "American." These tips are merely a metallic plate formed to fit the toe of the shoe, and turned up in front about a quarter of an inch—just far enough to take the brunt of all the "stubbing," and save leather. This great improvement began with copper tips, cheap looking, but none the less servicable. These were followed by silvered tips, still more conspicuous; but the greatest improvement of all is a black metallic tip, finished to so closely resemble leather, that it may be used on the finest quality of shoes, without being conspicuous, or hardly noticeable. It is found that a tip of leather the same as that of which the shoe is made, is of very little service, while the slight metallic ridge afforded by the tips places the resistance to wear, just where "it will do the most good." The Shoe Tip Co. claim to be able to prove that the introduction of their tips saves the buyers of shoes $5,000,000 annually; if the claim be well founded, this, at first sight trivial affair, becomes one of real commercial importance. The tips only are supplied, by the company, to shoemakers in every part of the country.

Directions for Leveling or Terracing Fields.—"J. W. H.," Marion Co., Fla. You will find ample directions for preparing the surfaces of sloping land, to either receive or carry off water without damage, in Stewart's "Irrigation for the Farm, Garden, and Orchard." Although this book relates chiefly to irrigation, yet to make irrigation practicable, the surface must be carefully prepared and drained. These related subjects are also treated in sufficient detail to render the book generally useful.

Death of George Grant, of Kansas.—We regret to announce the death of George Grant, Esq., of Victoria, Kansas, which recently occurred at his residence at that place. Mr. Grant had become widely known as an enterprising resident of Ellis Co., Kansas, where he owned a very large estate, stocked with choice sheep, cattle, and horses. We have frequently noticed the interesting operations of Mr. Grant, and the gratifying success which attended his efforts to introduce high-bred stock into that State. In this he was a pioneer, and his success has led many other persons to follow his example, until Western Kansas, Nebraska, and Colorado, have become possessed of a large number of fine pure-bred herds. Mr. Grant, a retired English merchant, was an enthusiastic improver of his land and stock, and has done much to benefit his adopted State.

American Berkshire Record.—The American Berkshire Association has done good service to swine breeders in providing a record for pure-bred animals. The value of a pure-bred animal for breeding needs no remark; it is a universally accepted maxim that only a thoroughbred should be used to increase its kind. A record of thoroughbred stock, whatever imperfections may necessarily be attached to it, adds a certain value to recorded animals. To popularize this idea is a good thing, and although some ridicule was at first cast upon a swine record, time has shown good results from it. The Association works not for fame or wealth, but for the interest of breeders, and we desire to call the attention of all breeders of Berkshires to the fact that there is such a Record of which they can avail themselves for a very small fee, and which has become an authentic organ of breeders of these swine.

Cost of a Cotton-Seed Oil Mill.—"W. C.," Wilmington, N. C. The cost of the machinery needed for the extraction of oil from cotton-seed, will be about as follows, viz.:

Cost of hydraulic presses	$3,500	$5,150
Hulling machines	850	
Pair of rollers for crushing	450	
Hair mats and bags	350	

This machinery will have a capacity for using 10,000 pounds of seed per day, and making 160 gallons of oil and 3,500 pounds of oil-cake. The value of these products will be about $64 for the oil and $43 for the cake. Some part of the expenses can be saved by making soap of the residuum of the oil presses and the ashes of the hulls. A cheap building, and a 10-horse power engine, would have to be provided.

Cortland Board of Trade.—A Board of Trade for the sale of cheese has been established at Cortland, Ohio. Sale days are Wednesdays of each week; the hours from 11 to 4. D. D. Marvin, President.

How much Milk for a Pound of Butter?—"T. L. B.," Amelia Co., Pa. If milk contains 10 per cent of cream, it will require about 30 lbs. to make a pound of butter. A quart of milk weighs $2^{9}/_{10}$ lbs., so that about 13½ quarts will be needed.

The Adamant Plow.—"W. L. B.," Ilion, N. Y. The two-horse Adamant plow is the one suited for general purposes. This is a very handsome and valuable implement, which has a remarkably easy draft, a perfectly bright polished surface, harder than steel,—whence the name—and the mould-board is so shaped as to turn a very neat furrow slice as nearly flat as possible. Having plowed our corn ground, both sod and stubble, the present season with one of these plows, we are able to say that it is all that can be desired in a plow. By using movable points, the plow is made much more effective and durable.

Sundry Humbugs.

The selection of the Candle to head the Humbug Column, was suitable in more respects than one. It was originally intended as a warning to those unfortunates who will go blindly for any scheme that promises brilliantly, and who will, even after they have been singed once, try again, like the moths flying towards the candle. While the moths represent those who will, foolishly, be victims, we find, without intending it, that the candle represents a number of popular humbugs. The candle burns brightly for a while, then burns low, then sputters, and at last it is snuffed out altogether. We have had a hand in the work

OF SNUFFING OUT HUMBUGS

for these many years. Among those which have of late been most effectively squelched are the varied forms under which one Elias tries to conceal himself. We find, as in a "Punch and Judy" show, various figures going through with the motions, all with different names, but a look behind the curtain shows but one pair of hands moving the puppets, and the hands are the hands of Elias. This Protean operator does not operate so much as he did. It is but a few weeks since we received

A GREAT MANY LETTERS DAILY,

asking about Russell & Co., Hetherington & Co., Blanck & Co., and others, who offered to dispense freely (for a consideration) gold watches and heaps of jewelry; about various mining schemes, from the most tempting "Silver Mountain Co.," down to the one-horse dodges of Clark & Co., and Keys & Co., with their slips, asking if "this signature is genuine," a full history of all of which is to be found in our former numbers. Apropos of

THESE SIGNATURE SLIPS,

A friend in Pa. writes that the signature which comes back to him must have been cut from his letter to a concern in Greenwich St., N. Y., which pretends to trade in inventions. Our correspondent feels sure that this invention shop is in league with Clark & Co., and all the rest of those who try the signature dodge.

NEW WALL STREET SIDEWALK CIRCULARS,

setting forth that those who send them have peculiar advantages for making a small sum of money into a large one, have appeared of late. We can only say of these circulars as we have said of former ones—The parties who issue them, though they hail from Wall St., are not known to the regular business men of "The Street," do not belong to the "Board of Brokers," and are practically unknown. They mainly come from the cheeky hangers on of the street, who are known to the regular business men as "sidewalk operators" and "gutter snipes." We do not advise our readers to invest money *with any one*, for Wall St. operations, unless they can afford to lose every cent of it. If they have money which they wish to throw away, there are many respectable brokers who will (for a commission) lose it for them openly and above-board. Pay no heed to these circulars....The good work of the "Massachusetts Society for the Improvement of Agriculture," which allowed us to make last month, such a complete exposure of

JONES & CO., THE "BUTTER COMPOUND" CHAPS,

has been most beneficial in its results, as it has saved the farmers of the country many thousands of dollars, for which these farmers owe abundant thanks to that venerable, but still actively useful Society. Jones appears to be, for the present, perfectly squelched, but he has turned up in so many shapes before (including that of defendant in suits before the U. S. and other Courts, in which he has been heavily fined), that we may look for him again in some other form—like "the old woman who sold earthenware."—"In some tall pitcher or broad pan, *He* in *his* shop again may stand." One of Jones' dodges was, while living and carrying on his business at Ashland, Mass., his letters were mailed and received at South Framingham, three miles, and at Hopkinton, four miles,

distant from that place; yet with all this dodging his mail has been stopped at different times. We have a pretty full history of this young man's career, which may be useful if he starts anew.

HUMBUGS FOR FARMERS AND GARDENERS

are still extant in the offer of most wonderful seeds and plants. If any one wishes to try any of the new and astoundingly prolific kinds of corn, offered from some before unheard of, far-off town, let him go slow; if the corn prove half as valuable as advertised, a small sum invested should produce enough to furnish seed for next year—but let no one risk his crop by sowing *any new thing* to the neglect of old and tested kinds....Some chaps have been taking orders in Pulaski Co., Ill., for "Thornless Gooseberries," and when the plants were found to have the usual number of thorns, the plea was made that it was the *berry* only that was "thornless." ....A certain lawyer appears to be actively engaged in

WRITING THREATENING LETTERS

to various parties on behalf of makers of quack medicines, and these parties write to ask our advice. We do not keep a "Law-shop," and our advice can only be given on common-sense principles. If these parties have *agreed* to do a certain thing, we think that an average jury will decide that they must conform to their agreement, even if the stuff in question is merely a quack-medicine. Unless they are prepared to stand a suit, and are able to show that false representations were made, when they agreed to do certain things, and can show fraud, our advice is, to settle as they best can, and regard the cost of settlement as the price paid for a lesson which teaches them not to

"TOUCH, TASTE, OR HANDLE,"

or have anything to do with any secret medical compound whatever. This is to be said, however, that most of these threatening letters are from "barking dogs that never bite;" they get what they can by threatening a few times with increasing vehemence, and stop short of actual law-suits. If we had been duped into an unintentional agreement about a quack medicine, we would stand a good deal of threatening and a little lawing, *if* it came.....For many years the *American Agriculturist* fought the war against Humbugs not only unaided, but without the least glimmer of sympathy from any journal whatever, whether "agricultural" or secular—indeed at the present day a journal that claims a leading position in agriculture, and is in some respects entitled to it—persists in the weekly publication of the most evident frauds. If it receives as many complaints of its course as come to us, it must be well paid to allow it to defy the protests of its readers. Just now a word of encouragement comes in

THE CHICAGO EVENING JOURNAL,

which congratulates itself that the laws of Illinois, which make every one who proposes to practise medicine, show a regular diploma, or pass an examination before the Board of Health, have had a most excellent effect; "over 1,100 medical humbugs have been obliged to shut up or leave the State." Elated by this sweep, the "Journal" proposes to go further; it holds that charlatancy and quackery do not attach themselves to medicine only, and proposes a law which shall free the State of

SHYSTER LAWYERS AND CLERICAL PRETENDERS,

and thus purify two other worthy professions.—Go on, brother of the Journal, we are with you in every good work ...We have had frequent occasion to say that these columns can not be used for personal ends, and if any one wishes to "get even" with, or expose another, the very place he can not do it in, is the Humbug column of the *American Agriculturist*, which is solely devoted to the public good, and has never, so far as we are aware, been used as a medium for the redressing of private grievances. As these general warnings have not had their full effect, we are obliged to make an example of

A. B. PATTEN, OF GREELEY, COLORADO,

Patten, we have before us your letter to one C. D. P., in Chicago, Ill., in which you complain that some kind of a gimcrack, which you purchased for 25c., is not worth the money. With that we have nothing to do. You say: "This and others of your advertisements are regular swindles, and I am prepared to make you smart for it. * * * One of our papers offers five dollars for every swindle or humbug exposed by its subscribers. Now, unless in ten days I receive $10, your name goes into that paper. Orange Judd will hear from me, besides others, and you will be exposed. Don't think I am fooling. I mean business. Send me the money, or you will be exposed."—There, Mr. A. B. Patten, how do you like the look of that in print? You have laid yourself open to a suit for "blackmailing." The courts in the Eastern States are justly severe upon the writers of threatening letters, and would make short work of you by giving you long work on behalf of the State. We hope that the Western courts are equally severe, and that "C. D. P." may test the matter. Patten, you are a high old reformer. You feel that you have been swindled, but can be bought off for $10. You "mean business," but what very small, sneaking "business" it is. You would not be worth the prominence we have given you, were it not as

A WARNING TO OTHERS,

against using the name of Mr. Judd, or any other publisher or editor of this paper, or that of the *American Agriculturist* itself in any such manner. We have tried to stop this by giving general caution—hereafter we shall take a more direct method, and name persons and places.

Docks.—"B." The only thing to be done with docks, is to pull them. This is not difficult when the land is moist, and if the roots are large, a bar or lever of some kind may be needed. It is desirable to get the roots out entire, or they will start anew.

Tomatoes and Cancers.—The story has gone the rounds of the papers, that the use of tomatoes tends to cause cancer, and some persons, actually alarmed, write to ask if it is so. Tomatoes are eaten and cancers occur (though very rarely), and we can not prove that the one has no relation to the other, any more than we can not prove that they do not cause baldness, squint-eyes, corns, and crooked little-fingers, but we think they are quite as likely to cause any of these as cancers.

The Cooley System of Setting Cream.—The advantages of a method of setting milk for cream by which the temperature may be kept steady and as low as possible, and access of air to the cream be prevented, are now fully recognized by dairymen. There are several devices for the deep setting of the milk, but only one for the submersion of the deep cans of milk in the ice cold water, which is the most effective. This is known as the "Cooley System," the apparatus for which has been advertised in our pages. We have had their apparatus in use for some months, with very satisfactory success. A report of a meeting of the Chatham, N. Y., Farmers' Club, held January 5th, mentions the exhibition of samples of butter made by a member who had set some milk in open pans, and in the Cooley deep cans. The butter from the deep cans was of very superior quality. A similar report comes from Iowa, where, at the Buchanan County fair a diploma was given for the best creamery butter made by the Cooley process. At this fair, creamery buttery is not permitted to compete with dairy butter, else the first premium would have been awarded.

Selling or Using Bones.—"Q. T. G.," Morrow Co., Ohio. Unless there is a bone mill near by, where bones can be ground fine, it is better to sell them at 50 cents per hundred, and buy superphosphate ready made at $35 per ton. It is a dangerous and troublesome job for persons unused to such work as handling and mixing acids to make superphosphate at home.

Mushrooms.—"J. P.," Ohio. You could hardly raise mushrooms in the open ground during either of the summer months, and it would be difficult to do so anywhere, unless in a cave or cellar, so situated that it would keep at a low and even temperature.

Irish Juniper.—"Postmaster," Potter Co., Pa. The Irish is only a very erect and compact variety of the common Juniper, and it is not possible to say, from a mere bit, what the tree is. It is certainly neither a Hemlock nor a Red Cedar.

White-Crested, White-Polish Fowls, were illustrated and described last month—Mr. Sperry, their owner, writes that he is so overwhelmned with letters that he can not answer them, and wishes us to announce that he has *no eggs for sale* or to give away.

Grass for Winter Grazing.—"B. W.," Highlands, N. C. The best grass for winter grazing is Kentucky blue grass. This pasture must be kept solely for this use, and not grazed at any other season. It will grow well in deadened timber.

Paris Green for the Potato Beetle.—Abundant experience has shown that there is no known effective remedy against the potato beetle, except Paris green. All other applications have failed, while this is effective, and at once. There are a few important precautions to observe in procuring and using it. The first is, to purchase only a really *pure* article; an adulterated and cheap one may cause the loss of a crop. F. W. Devoe & Co., Fulton and William Streets, New York, have for some years past given special attention to the manufacturing of pure Paris green, and their packages contain an article that is really pure. Next, an adequate supply should be procured at once, because the price increases with the demand, and at the same time the supply decreases, as the manufacture can not well be carried on in hot weather. The poison should be kept in the most secure manner, and used without waste. Messrs. Devoe & Co. send to applicants a circular with plain and practical directions for using the poison.—And we will add that with proper care, Paris green is a safe article to use; that it is the great remedy against this Potato pest—that a tablespoonful of it in a watering-pot full of water, and having a sprinkling nozzle, can be readily and easily carried and applied to the potato vines affected, with a certainty of killing the beetles. The Paris green does not dissolve; hence the need of keeping it constantly stirred or shaken up in the water, as it is applied. We have tried this with gratifying results. There are various useful contrivances for applying the green as dry powder mixed with flour or other divisor.

What is a Hone.—"D. C. C.," Roselle, N. J. A road scraper or leveler would hardly be recognized under the name of "hone." The use of the word "hone" for this implement on Long Island, must be local only. It is always best to call a thing by its commonly known name, as this saves much explanation. Everybody would know what a "road-leveler" is.

Tree Roses.—"F. A. B.," Mercer Co., Pa. These can not be classed as humbugs, although the representations made concerning them may be fraudulent. There is no special variety known as *the* Tree Rose, as almost any rose may be made into a "tree" by budding it upon the stem of a Dog-rose, at the hight of three to five feet. If "thousands of dollars" have been expended for these roses in your county, it is quite time that the people knew that they are quite unsuited to our climate. The hot sun scorches the tall naked stock, and the top is killed by the winter; they seldom last more than two years, while the majority are finished the first winter.

Kidney Worm in Hogs.—"F. H. N.," Rowsburg, Ohio. When a pig is paralyzed in the hind-quarters, it is not always the effect of worms in the kidneys or in the loins; worms are very rarely found in the kidneys, but more frequently infest the muscles and fatty tissues of the loins. In the majority of cases, however, the paralysis is caused by a disease of the covering membrane of the spinal marrow, and consequent effusion which interferes with the operation of the nerves of the locomotive and digestive apparatus. The remedy is a counter irritant, such as turpentine or mustard applied to the loins, and a diuretic which relieves the pressure of the effused serum. One ounce of turpentine may be given in two ounces of linseed oil every second day, or one dram of saltpeter may be given every day. The turpentine will be useful in case worms should be the cause of the trouble.

Feeding Cows for Milk.—"N. P. M.," Columbus, Ohio, writes:—What is the most profitable way to feed cows; to give the meal dry, wet with cold water, or wet with hot water; with labor at $20 per month, corn worth 40 cts., oats 25 cts., and 7 cts. a bushel for grinding? My present practice is to haul out the manure as fast as made, returning with a load of fodder. The manure is spread as hauled. The meal I feed dry. I have just commenced a milk dairy, and desire to get the largest amount of good milk at least cost. My practice is to feed one-half basket of fodder at 5.45 A. M. to each cow; milk at 6, at 7 turn out to freshly-pumped well water. While cows are out the stable and mangers are thoroughly cleaned; then 6 quarts of meal given to each cow, and one basket of corn fodder. The cows are then allowed to come to their stanchions, and at 12 M. have one to one and a half basket of fodder. At 4 P. M. the cows are again turned out to fresh water, while the stables and mangers are cleaned; then feed 6 quarts of meal and ½-basket of fodder, and the cows returned to the stable. At 5.45 P. M. fed one basket of fodder. At 6, milk, and close up the stable for the night.—[We can not see that the above practice can be improved upon.]

Swine, Pigs, and Pork.—It is not surprising that there should be a large demand for works upon swine, when we consider that these animals—taking the country through, and at a low valuation—are estimated as worth about $70,000,000. Swine are so rapidly multiplied, and so easily raised, that in some parts of the country—even where they are most valuable as a farm product—they have been sadly neglected. The idea that "one hog is as good as another," has prevented proper attention to the breeds, and the treatment indicated by "root hog or die," however it may have resulted as to *rooting*, has led to *dying* by wholesale. The results of this management, or no management, have had their proper effect. When a farmer who has depended upon his pork for a large share of the ready money that comes to him in the course of the year, finds his swine suddenly swept off by hundreds, and he stands helpless and without remedy, it is a blow heavy enough to make him stop and inquire "why is this?" The best answer that we can make to all who have suffered similar losses, or who fear such, is, get Coburn's "Swine Husbandry," and study it carefully. This work, while full in other matters, gives special attention to the diseases of swine,

and shows very plainly that the much and justly dreaded "Hog-Cholera," is to be regarded as an *avoidable disease*. The appearance of this fatality among swine, is, in many cases, an indication that years of neglect have produced their legitimate results, and though when it once appears, it may be communicable, swine in a proper sanitary condition are not liable to its spontaneous outbreaks, and are much less subject to take it from others, than those which have been systematically neglected. This work is by a large breeder of swine in Kansas, and gives in full the Western methods with these animals... A work not the less valuable of its kind, is "Harris on the Pig," which takes up the subject in a different manner, and is full upon the origin of the different breeds of swine and their characteristics. It gives special attention to the value and management of thoroughbred animals, and while its author as unmistakably gives preference to the Essex, as Mr. Coburn does to the Berkshire, other breeds have their merits fairly set forth. This work gives much in the detail of pig management that the other does not touch, and the two works together may be regarded as a *library*, embodying the present knowledge on "Swine, Pigs, and Pork," as set forth by two eminently successful breeders in widely separated localities. Both works are published by the Orange Judd Company, and are sent post-paid, Coburn's for $1.75, Harris' for $1,50.

The Potato-Beetle—Paris Green—An Englishman on.—The Colorado Potato-beetle or Potato-bug, being a genuine native American, of course the proper place—as such things go—to find the latest intelligence concerning it, is in an English Journal. That most excellent monthly, "Hardwicke's Science Gossip," had a few months ago a letter from one W. V. Andrews, "Corresponding Secretary of Long Island Entomologists Society, U. S. A.," in which are statements of such a remarkable character that the author hardly needs to state "I am an Englishman;" for no American familiar with the subject could have made them. This "Secretary" advises his "countrymen," in case the Potato-beetle should appear there, to "use no Paris green." The reasons for this advice show that he knows nothing about Paris green, and that whatever entomological knowledge he may have of *Doryphora*, he has had little practical experience with 'tater-bugs in the field. Hear him: "For larger lots [of the beetle] the ordinary butterfly bag-net, swept gently along the potato tops, will capture more beetles in an hour than Paris green will kill in a week!" Will the "Secretary," when he goes out hunting with his "ordinary butterfly drag-net," state how many *larvæ* he finds in his ordinary entomologists "drag-net?" Those who have any practical knowledge of the beetle, as an agricultural pest, will be prepared for the absurdity which follows. This Secretary says: "Mr. Rye tells you that Paris green is a favorite remedy here, but he does not understand the American way of doing things. Some State entomologist, or other, probably had a friend in the oil and color business, and gave a friendly puff to Paris green Then the oil-and-colorman advertises in some agricultural papers that he has the 'never failing exterminator of potato-bugs, Paris green,' and the editor of that journal at once *strongly* recommends it. You do not do things in that way in honest old England, but we do here."—This Andrews is both impudent and ignorant. As to "some State Entomologist or other," we can now recall but two "State Entomologists," both of whom are practical men, who are known for their services to agriculture, and could no more advise the use of Paris green, or any other article, from interested motives, than they could malign another by the indirect method shown in the quotation. The dig at "the editor" of "some agricultural papers," (though "an Englishman," this Secretary's English is none of the best), is something that is so bewilderingly stunning that we do not know what the effect may be when it becomes known that there is such a man as Andrews, and he has written all that. As one of the "editors" we say—if it is the last scratch we are to write, we *will* say it—"Now, Andrews, don't!—No, they *do not* "do things in that way in honest old England."—Here, if one finds a useful remedy, he tells what it is, and allows every one to use it, knowing just what he is handling; and if dangerous, he knows how to guard against its injurious effects. In that 'onest h'old H'England they have not—and more's the pity—"the American way of doing things." In that beloved country—Oh, "W. V. A.," *why* did you leave it?—if one finds anything that will kill a plant louse even, does he publish the remedy?—Not much! He first writes to the papers, and tells the public that he has discovered "Suthink." After a while the stuff appears in papers or bottles, labelled "Gishurst's Compound," "Fowler's Insecticide," "Abysinnian Compound," or some such thing, and we are sorry to say that respectable papers not only allow such arrant quackery to be advertised in their columns, but actually recommend the use of the stuffs, of the composition of which they probably know nothing. This Secretary so dislikes "the American mode of doing things,"—things are done so much better in "honest old England"—that we advise him to take his "ordinary butterfly bag-net" and go home. He will never be missed from the scientific circles of the country he has maligned. For the benefit of those Englishmen who may be in search of information concerning the Potato-beetle (we do not suppose it possible to teach the "Secretary" anything), we will say that the *best, fullest*, and *most reliable* account of the insect, its natural foes, and its proper treatment, is to be found in a work called "Potato Pests," published by the Orange Judd Company, and to be had of Trubner, London, and no doubt of other booksellers. This work is by Prof. C. V. Riley, who is one of our first scientific entomologists, and easily *the first* in the practical application of entomology to agriculture and horticulture. It is true that he has the misfortune to be "some State Entomologist," still he is not only "an Englishman" but at the same time a man of science, and a gentleman, and he is not, to our knowledge, the "Secretary" of any thing.

Poultry Literature.—None of the "minor economies" of the farm are more important than the poultry-yard. It not only supplies eggs and fowls for the table, but is often the chief reliance of the housewife for pocket-money. But there is no point on the farm in which the difference between good and bad management is more strikingly manifest, and the difference between success and failure is an important one. After a careful examination of the various works on poultry management, we found none so clear and concise, or of which the teachings were more strongly marked by common sense, than Wright's "Practical Poultry Keeper," and what is very unusual in an English work, it appeared to be quite as well adapted to our conditions as those of English poultry keepers. Arrangements were made by the Orange Judd Company for its publication in this country, and it remains the best general standard work on the subject. [Sent by mail for $2.] A smaller, more compact, and very useful work is Saunder's "Domestic Poultry," by a gentleman who has been a very successful exhibitor of poultry. [Sent by mail in paper for 40c., and bound in cloth for 75c.] An important series of articles written for the *American Agriculturist*, by H. H. Stoddard, now editor of the "Poultry World," Hartford, Conn., has been collected and published under the title of "The Egg Farm." While the teachings of this are directed toward the greatest production of eggs, it contains much that is useful to those who raise poultry for their flesh. Indeed it is a real store-house of practical hints and suggestions. [Sent by mail, in paper covers, 50c., in cloth, 75c.] In his "Poultry Yard and Market," Mr. Corbett gives his experience with his style of incubation, and artificial mother, and various other matters of interest to the poultry-raiser. [By mail, in paper, for 50c.; in cloth, 75c.] These works are all by practical men, and together cover about every aspect of poultry-management. Those who wish highly ornamental works, in which the breeds are illustrated by fine colored plates, can for $9 procure Tegetmeier's Poultry book, a standard work by the most eminent English authority on the subject.

An Index to North American Plants is a more popular title than "Bibliographical Index to North American Botany," and we choose here a popular title to commend to Nurserymen, Florists, and others, a work which, though compiled especially in the interests of botanists, can not fail to be of the greatest utility to all who have to do with plants and who care to refer to original sources of information. Every one interested in native plants, whether herbs, shrubs, or trees, is aware how widely scattered is the information relating to them. Botanists will understand its value from its proper title, which we have given. We can best give an idea of its utility to nurserymen and others who wish to know about plants, by a single illustration. We turn at random to our common Tulip-tree (incorrectly "Poplar" in some States), and find 41 references to works in which it is described or noted; and it is moreover indicated, by the use of full-faced type, that in 18 of these places there are figures of the tree, or some portion of it. The references are not confined to botanical works alone, but horticultural books and periodicals are also quoted. What is done for this one tree, is done for all other trees and plants, and it will be seen from this example, that this index is a key to all the sources of information concerning every North American plant. The work is by that acute and pains-taking botanist, Mr. Sereno Watson, of the Herbarium of Harvard University, who has done an eminently good thing for not only botanists, but horticulturists generally. Of course such a work, so brain-wearing and time-consuming, can never "pay," and we doubt if it could ever have found a publisher, had not that most useful Institution, the Smithsonian, assumed the publication, as one method of "diffusing knowledge among men." The first vol., extending through the polypetalous families, is now out. A limited number of copies, at $2.00 in paper, and $2.25 in cloth, by mail, post-paid, may be had by addressing "Curator of Harvard Herbarium," Cambridge, Mass.

The Plants of North America, or of any other country, taken together, are called its "*Flora*," just as the animals constitute its "*Fauna*." When we speak of the "Flora of North America" we may refer either to the plants themselves, or with equal propriety, to a work describing these plants. "North America," so far as its "Flora" is concerned, starts from our southernmost boundary, and extends northward as far as vegetation of any kind exists. We frequently see mention of the varied agricultural capabilities of our country, affording sugar-cane, and the banana, and extending through various zones, until we reach a point where the only crop is ice. Quite as wonderful in its extent and variety is the native vegetation. Let one start from Southern Florida with its tropical and subtropical plants upon one side, or from Western Texas, Arizona, and Southern California, with their almost Mexican vegetation, on the other, and pass northward along the Atlantic coast, or along the Pacific coast, or starting part-way (though not mid-way), between, along the great mountain ranges which form the "back-bone" of the Continent, and continuing upon either line until the Arctic regions are reached, the number and variety of native plants that such a traveler would meet with, is immense. Yet one must enumerate and describe all these plants, growing in such a variety of climate and locality, if he would record the plants of our country—or in other words, write a "Flora of North America." Several Europeans, in the early part of the century, undertook this task, but "North America" as here defined, was unknown to them. About 40 years ago, the lamented Doct. Torrey, together with his then young associate, Doct. Asa Gray, made a noble beginning at the "Flora of North America," and carried it well along, but just then North America increased too rapidly, and among other reasons, the want of settled boundaries made it necessary for them to suspend the work. Our boundaries being now well established, the newly acquired territory having been well explored, Doct. Gray has now undertaken the task of recording the plants of this vast country, and we have already received the first instalment of "The Flora of North America." Botanists will learn of this work and its peculiar features from other sources; but there is a large class of persons, not scientific botanists, who are interested in knowing that a work, in which every native plant of the whole country is recorded and described is in course of preparation and publication. The work will be in two volumes of about 1,200 pages (large 8vo.) each. For reasons which botanists will appreciate, the new work begins where the earlier work of Torrey and Gray, just alluded to, left off. The present part, one-third of the second volume, includes the Monopetalous Exogens (*Gamopetalæ*) beyond *Compositæ*. The unbotanical reader will better understand its scope when we say that this part includes, among other large families, the Heath Family, with so many highly ornamental plants; the Milk-weeds and the Gentians; the Phlox and allied families, rich in garden species; the Borage, the Morning Glory, the Solanum, the Fig-wort, and the Mint Families. For the botanical character of the work, it is sufficient to say that it is by Doct. Gray, and indeed we may say the same of its mechanical aspect also, for being printed under the critical eye of the author, it presents that judicious arrangement, and convenient grouping that will be best appreciated by those who most frequently consult the work. New York: Ivison, Blakeman, Taylor & Co., p.p. 402, price $6.00. Supplied from this office.

Basket Items continued on page 233.

Bee Notes for June.

BY L. C. ROOT, MOHAWK, N. Y.

This, in most sections, is the general swarming month. Those who practise natural swarming, should have hives ready, and kept in a shady place. After the bees are hived, protect the hive from the rays of the sun, with a roof, or other cover. Swarms are often lost by going to the woods, if these directions are not followed. I much prefer artificial increase. Where but few swarms are kept in hives with movable frames, an occasional examination may be made, and if queen cells have been made, it will indicate the proper time to divide the bees, which may be done as follows: Remove the hive from which the swarm is to be taken to a new position, several feet distant, and put a new hive in its place. Take one comb, containing brood, the old queen, and all the bees that will adhere to it, from the old hive, and place it in the center of the new one. All queen cells should be removed from this comb, or one selected that has none

upon it. Fill the space at each side of this with empty frames, and place an empty frame in the old hive at the outside. After the queen cells in the old hive are all sealed over, cut off all, except one of the largest and best looking, from which the colony may be supplied with a queen. Or, what is greatly preferable, a laying queen may be given it the day after dividing.

Weight of Bees.

No. 1 has been united with another, and, therefore, cannot be reported. No. 2 consumed, during April, 4½ lbs. of honey, No. 3 and 4, 3½ lbs. of honey each.

Cow Milkers.

Many inquiries have been made in regard to "Milking Machines"; replies to these by mail have been impracticable on account of their number. We therefore take this opportunity of stating what *we know* of this machine. The idea of milking a cow by means of a mechanical device is attractive on the face of it, because this operation is one of the most irksome of all farm labors. There has been a prejudice against the use of any other methods of milking than the old fashioned one, and we confess to have felt to some extent the influence of this prejudice, and have been very cautious in referring to the Milking Machine. For exceptional use in the cases of sore or chapped teats, hard milking cows, gargeted or caked udder, and other similar difficulties, there has never been a question as to the necessity for using a milker; some such means is indispensable. But for general use to save time and labor, we have not previously been able to say that the machine was advisable. After a personal trial we must admit that we have been forced to modify our previous opinions. We give an illustration of the machine and its manner of use. The tubes, of pure silver, are inserted carefully in the teat, the milk having been first started, to allow the opening to be found. The pure India rubber tubes then conduct the milk, which flows freely into the pail. That is all there is of it Care must be taken to use only such machines as are of pure material, and after the milking to put the tubes into some clean, cold water, and well free them from milk. In using the machine, we find it operates as follows: It draws the milk so entirely away that none can be procured by stripping; it acts apparently with much ease and comfort to the cow, our animals evidently showing much surprise and pleasure at the freedom from the usual manipulation of the teats, and turning the head and viewing the novel process seemingly with great interest; the milk pours with great rapidity, a large pail, holding 14 quarts, being filled in 7 minutes; the process is perfectly clean, and the milk gathers no impurities, as in the usual handling of the teats and udder, in which numerous scales of skin, hairs, and "cowy" flavored matters unavoidably fall into the milk. The relief from the muscular exertion of the wrists and arms, is very grateful to the milker. So far we are certain. Of the future effect upon the cow we are not prepared to say, because this is a matter which can only be learned by the continued use of the milker; but there is evidence that the machine has been used in a noted Scotch dairy for 8 years, and this may go for something. As it is, we shall continue to use it, and take whatever risk there may be. As the tube is very small, and is retained in the teat only 3 or 4 minutes, and the teat is to be stripped down always after finishing milking, we apprehend no evil results. For the introduction of the milker into this country, we are indebted to Mr. Wm. Crozier, of Northport, Long Island, who has introduced several useful implements to American farmers

THE COW MILKER.

The Hay Crop and How to Gather It.

The present season has thus far (the middle of May) been very favorable for a large hay crop, and the labor of gathering it will be greater than usual. There is likely to be an extra large demand for haying machines and "tools." We have already spoken of mowers, conspicuous among which stand the Champion Haymaker, and the New Model Buckeye. After the mower comes the tedder, a machine which, in thick clover, will be found of great use to spread and turn the cut herbage, and prepare it for the rake. Of the tedders, we have used one made by the Ames Plow Co., while another style, made by the Higganum Manufacturing Co., has impressed us favorably. The steel-tooth horse-rake is doubtless one of the most effective implements in the hay field. Of the large number in the market, that made by Wheeler & Melick Co., and another, made by J. R. Whittemore, are excellent implements. When the hay is gathered, Foust's Hay-Loader will load a wagon in ten minutes or less, and where the crop is large, will be indispensable, if economy of time and cost is the first consideration. This loader was illustrated in the *Am. Agriculturist* of Nov., 1876. After the hay is loaded, the Horse Hay-Forks and Pitching Apparatus, by which it is put away in the barn or stack, are perhaps the most important of any of the labor-saving haying machinery; because after a crop is well made, it may be seriously damaged by heavy rains before it can be secured in the barn or the stack by the usual slow methods. Some of these hay-forks have already been described in the *American Agriculturist*, others are briefly referred to as follows. The "Noyes Grapple Fork," shown open at figure 1, and closed at figure 2, is an excellent implement, and can be used for hoisting straw, corn-stalks, or sheaves of grain. This is made by the "U. S. Wind-engine and Pump Co.," Illinois. The same Company also make the "Field Pitching Apparatus" (fig. 3), used

Fig. 1. OPEN. NOYES' GRAPPLE FORK. 2. CLOSED.

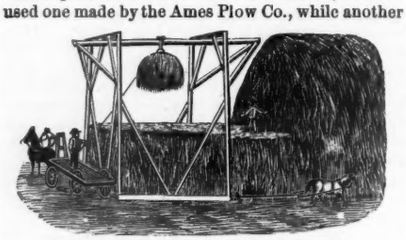


Fig. 3.—FIELD PITCHING APPARATUS.

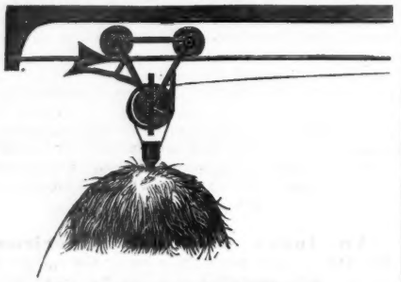


Fig. 4.—AMERICAN HAY ELEVATOR.

Fig. 5.—DOUBLE HARPOON FORK.

for stacking hay. The "American Hay-Elevator," shown in figure 4, is made by J. R. Fitzhugh, of Pennsylvania. This can be fitted to any building, and has the merits of being simple and easily worked. The "Double Harpoon Fork," made by the "Pennock Manufacturing Co.," Penn., (fig. 5), is a fork of great capacity and strength, and may be used in short straw, hay, or bound grain. Another pitching apparatus, of which we have no illustration at hand, is Chapman's. Of the comparative merits of all these, it is difficult for one who has not tested them all to speak. Before deciding it will be well to procure circulars of the various makers, and examine into the merits and testimonials of each. The P. O. address of the makers can be found in the advertising columns.

Science Applied to Farming.—XLII.

The Use of Brains in Farming—A Lesson in Chemistry.

On the blanks for recording results of experiments with the fertilizers supplied for experiments this season, is the motto: "*One of the chief wants of our agriculture is closer study and observation by farmers.*" In an account of last season's experiments, presented at a meeting of the Conn. State Board of Agriculture, occurs the following:

"These reports are presented for just what they are, not developments of any new scientific truth at all, but efforts by practical men to apply established principles of science to the aid of their farming. And if I were to tell the truth, it would be that in my opinion, though such experiments, properly conducted, will be of the greatest value for the information they bring, yet, over and above this they have a still higher usefulness in the stimulus they give to closer study, more accurate observation and more rational application of the principles of science. The apparent object in introducing them was to work upon farmer's soils. Under this lay in my own thought, a deeper purpose, to work upon their owner's minds. And in this regard, at least, the outcome has been most gratifying."

We shall be aided in our efforts in this direction by

A Short Lesson in Chemistry.

Vegetable and animal substances, and manures and soils as well, contain three kinds of material—WATER, ORGANIC MATTER, and MINERAL MATTER, or ASH. If you keep a wisp of hay or a bone for a time in a hot oven, the *water* will be driven out. If you put the dried material in the fire, the *organic* substance will be burned away, and escape as gas or smoke, while the *mineral matter* will be left as ashes. The ash was all gathered by the plant from the soil. Part of the organic matter was supplied by the soil also, but the most of it came from the air, to which it returns when it is consumed. The ORGANIC MATTER consists chiefly of the four chemical elements, CARBON, OXYGEN, HYDROGEN, and NITROGEN. We are familiar with carbon in charcoal and lamp-black, which are nearly pure, and in diamond which is quite pure carbon. Carbon united to oxygen forms carbonic acid. Hydrogen and oxygen, which in their pure state are gases, unite to form water. When we inhale air in breathing, its oxygen is absorbed into the blood through the lungs, and unites with carbon and hydrogen of our bodies and our food, and we exhale carbonic acid and water. When wood burns in the stove, or vegetables decay in the air, carbonic acid and water are likewise produced. We need not to trouble ourselves about carbon, oxygen, and hydrogen, in fertilizers, because they are supplied to the plant in abundance by the atmosphere and the soil, through the leaves and through the roots. But the

Nitrogen

is an important ingredient of fertilizers. It is, in its pure state, a gas, and makes up about four-fifths of the air, the other fifth being oxygen. Nitrogen combined with hydrogen forms AMMONIA. The odor of "spirits of hartshorn," and of "smelling salts," is due to the ammonia. Nitrogen, combined with oxygen, is known as NITRIC ACID. In these and other combinations it occurs in minute quantities in the atmosphere, and in considerable quantities in soils and manures. Plants are unable to make use of the pure nitrogen of the air, though they absorb a very little combined nitrogen, in the

form of ammonia, nitric acid, etc., from the atmosphere. By far the largest part of the nitrogen of plants is absorbed from the soil through the roots. Nitrogen is available to plants only in certain combinations; is slow to form these compounds, and easily leaves them. It readily escapes from the manures and soils into the air, and is leached away by water. It is one of the most commonly deficient, and hence the most costly ingredients of the food of plants. Farmers are continually paying from 20 to 40 cents per pound for nitrogen in fertilizers, and their crops often fail for want of it.

NITRATES are compounds of nitric acid with other materials called bases. Thus nitric acid united with the base soda, forms *Nitrate of Soda*, which is one of the most valuable of our fertilizers.

The Mineral Matter or Ash

consists of several ingredients, of which the names are Potash, Soda, Lime, Magnesia, Iron, Silica, Sulphuric Acid, Phosphoric Acid, and Chlorine.

POTASH.—The basis of this is a very soft, light, silver-colored metal, called *Potassium*. Potassium unites with oxygen to form a compound which is known in chemistry as potassiumoxide or oxide of potassium. It is also called *potassa*, or more familiarly, *potash*. When wood ashes are leached the potash is dissolved out, and it is the active ingredient of the lye.

SODA, or sodium oxide, is a compound of oxygen with the metal *Sodium*. What is commonly called soda, is *carbonate of soda*, a compound of soda with carbonic acid. Common salt contains sodium also, but here combined with chlorine instead of oxygen. *Chlorine*, by itself, is a yellowish green gas. As it unites with sodium to make *chloride of sodium*, or common salt, so, when united with potassium, it forms *chloride of potassium*. Potassium chloride is the chief ingredient of "muriate of potash," one of the most important of the German Potash Salts.

LIME (calcium oxide), is the basis of limestones, marble, oyster shells, and the like. In these it is combined with carbonic acid in the form of carbonate of lime. By heating limestone the carbonic acid is driven off, and lime is left in its common caustic unslaked form.

MAGNESIA is the oxide of the metal magnesium. The "calcined magnesia" of the apothecaries is impure magnesia, with the carbonic acid expelled.

IRON is the same element, whether found in plants, manures, or soils, in which it invariably occurs in very small proportions as an oxide, or in the various ores from which it is manufactured on a large scale.

SILICA.—Quartz, or "rock crystal," is pure silica. Flint is nearly pure silica. Silica combined with various other elements, makes up the larger part of the rocks and minerals of the globe. Sharp sand consists chiefly of silica.

SULPHURIC ACID.—SULPHUR is familiar to every one in the forms of brimstone and flowers of sulphur. Sulphur united with oxygen, forms sulphuric oxide, or, as it is more frequently called, sulphuric acid. The ordinary sulphuric acid of commerce, called "Oil of Vitriol," and used in making superphosphates, consists of sulphuric oxide with a small proportion of water.

SULPHATES.—If sulphuric acid and lime are mixed together, they will unite and form a chemical compound, *Sulphate of Lime*. Gypsum or plaster is a more or less impure sulphate of lime. Sulphuric acid and magnesia make *Sulphate of Magnesia*, which we know as Epsom Salts; it occurs in some of the German Potash Salts. So *Sulphate of Soda* consists of sulphuric acid and soda. *Sulphate of Potash*, the basis of the best potash salts, used as fertilizers, consists of sulphuric acid united to potassa. *Sulphate of Ammonia*, which is a valuable fertilizer, consists of ammonia and sulphuric acid.

PHOSPHORIC ACID.—Phosphorus is the material which is used for the tips of friction matches, and causes them to shine when rubbed in the dark. It burns very easily, and in so doing unites with the oxygen of the air, and forms phosphoric oxide, or phosphoric acid.

PHOSPHATES.—Just as sulphuric acid combines with lime, potash, and other bases to make sulphates, so Phosphoric Acid unites with the same basis to form phosphates. Phosphate of lime is the most important of the phosphates. It is the basis of bone. When bones are burned, the water and organic (animal) matter are driven off, and we have left the bone-ash, which is nearly pure phosphate of lime. The South Carolina, Navassa, Canada, and other fossil and mineral phosphates, which are used for fertilizers, contain more or less earthy matters mixed with the phosphate of lime.

Whence Plants obtain their Supplies of Food.

Plants get part of their food from the air, through their leaves and other green parts, the rest from the soil through their roots. This is proven by a vast amount of laborious and accurate experimenting, carried on for the most part in the European Experiment Stations, for the purpose of discovering the laws of plant nutrition and growth.

WATER.—Plants have the power of absorbing water through their leaves, but the bulk of their supply comes, and must come, from the atmosphere to the soil, and thence to the plant through its roots.

ORGANIC MATTER.—CARBON, OXYGEN, AND HYDROGEN.—The carbon of plants is taken from the atmosphere. The leaves absorb carbonic acid, and with the aid of light wrest its carbon and oxygen asunder, setting oxygen free, and thus purifying the air, while they retain the carbon. Carbon unites with hydrogen, oxygen, and nitrogen, to make up the various tissues of the plant, the root, stem, leaf, and seed, the wood and bark, the gluten, starch, sugar, and so on. The atmosphere supplies carbon far in excess of the demands of plants. The best experiments indicate that the carbon is all, or nearly all, obtained from the air. The source of the oxygen and hydrogen is not definitely settled. It is very probable that the water absorbed through the roots is the main, if not the entire source of supply.

NITROGEN.—Our cultivated plants get the bulk of their nitrogen from the soil, through their roots. Many years of labor of the best investigators, and many thousands of dollars, have been devoted to the study of the sources of the nitrogen of plant-food. The theory that plants avail themselves of the free nitrogen of the air, of which there are thousands of tons over every farm, must be regarded as wrong. The theory that plants in general, and the "large-leaved" plants in particular, as clover, turnips, corn, etc., obtain a good deal of combined nitrogen (ammonia and nitrates) from the air by their leaves, is hardly tenable. The gain of nitrogen from this source, seems to be very small indeed. The most of the nitrogen of our crops is got from the soil through the roots. The soil gathers some nitrogen compounds from the air, however, and it is extremely probable that it assimilates free nitrogen, and thus, in two ways, stores up atmospheric nitrogen for plant-food. The nitrates in the soil, formed mostly from the decay of vegetable and animal matter, are the chief natural sources of the nitrogen of plant-food. Ammonia, which, like nitric acid, comes from vegetable débris and from manures, as well as from the air, is also used by plants. Other compounds of nitrogen, no one yet knows just what or how many, can also be assimilated by plants.

MINERAL MATTER, OR ASH.—The mineral ingredients of plants are derived exclusively from the soil. Of these, POTASH, LIME, MAGNESIA, IRON, PHOSPHORIC ACID, and SULPHURIC ACID, must be furnished to all agricultural plants, through their roots and by the soil, in order to their growth. If the available soil-supply of any one of these is deficient, the whole crop must suffer. As regards soda, silica, and chlorine, the experimental evidence is not so decisive. A small quantity of chlorine has been proven necessary for the perfection of some plants. Soda is needed in very minute quantities, if at all by crops. A little of silica is probably necessary to the perfect blossoming and ripening of grain.

To sum up in a few words: "Air and water together yield the materials out of which fully ninety to ninety-eight per cent of crops is built up. The soil has to give for their nourishment only the two to eight per cent of mineral matters, which remain as ashes when they are burned, and the one-half to two per cent of nitrogen which they also contain."

Contiguous Houses, Costing $2,000 each.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These designs were prepared for a block of five houses erected last year for Mr. Geo. Storms, facing one of the principal avenues at Bayside, L. I. The entire structure is 90 feet long, running north and south, and occupies half the avenue end of a village ground plot. One end section being a "corner," has a portion devoted to business purposes, the balance of the building is used exclusively as residences. They are thoroughly furnished with ranges, heaters, pipes for cold and hot water, and gas, and complete sewerage. The desirability of these buildings (and also of those in last month's *American Agriculturist*) is proved by the fact that

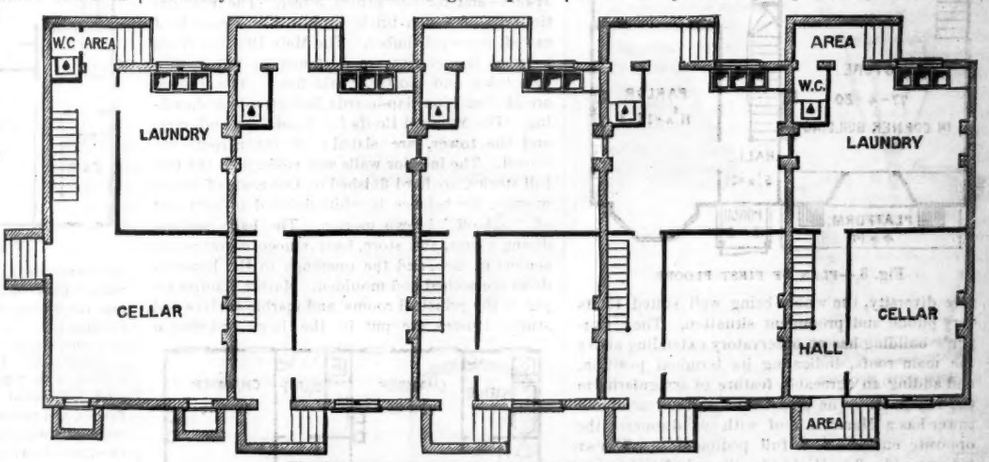


Fig. 2.—PLAN OF CELLARS OF CONTIGUOUS HOUSES.

all of them were engaged, and several occupied before they were fully completed.....**Cellars**, (fig. 2).—Hight of ceilings, 7 feet. Each is well lighted, and has outside entrances from the street and from rear yards. A hall, laundry, and water-closet, are floored and otherwise finished off; the balance is unfinished, to be used as a cellar for fuel and vegetables. The Laundry has a set of stationary wash-tubs, with cold and hot water. The Water-closet has an outside door leading from the rear yard, (this is designed to obviate the necessity and unsightliness of the usual out buildings.) The Fire-places shown are left open, and have continuous flues the whole hight of the chimneys.

These flues being heated through contact with the upper fires, insures a thorough ventilation of this story.... **Elevation,** (fig. 1).—This building appears well from all directions, is imposing in out-

Fig. 1.—ELEVATION OF CONTIGUOUS HOUSES AT BAYSIDE, L. I.

line, animated in details, and nicely proportioned—the hight agreeing with its breadth; the openings, and dressings, are changed in each story to

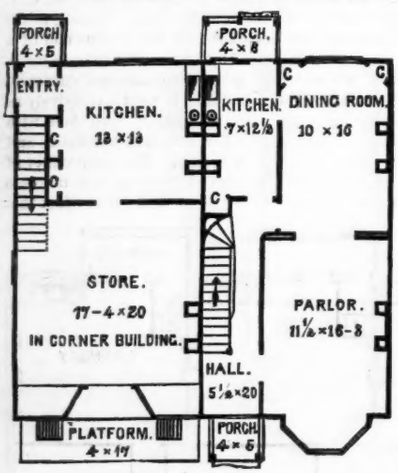


Fig. 3.—PLAN OF FIRST FLOORS.

give diversity, the whole being well suited to its very public and prominent situation. The "Corner" building has an observatory extending above the main roofs, indicating its terminal position, and adding an agreeable feature of irregularity in the sky-lines. The Street end at the rear of the tower has a Mansard roof with two dormers; the opposite end shows a full pediment.....**First Story,** (fig. 3.)—Hight of ceilings in four houses, 10 feet. The floor in the corner building is lowered 2½ feet, making that part 12½ feet in the clear. A hall, parlor, dining-room, and kitchen, are finished in each of the four houses, and a store, kitchen, and entry, in the corner building. Each of the parlor has a large bay-window, and is divided from the dining-room by sliding-doors. The Dining-Rooms have two closets each. The Kitchens are conveniently arranged with closets, ranges, boilers, and sinks. The Store is fair sized, has a double door entrance from the avenue, and has a wide stairway leading directly from it to the cellar. The Kitchen at the rear is for the use of the parties doing business in the store. The Family Entrance to the corner building is from the street at the side.

....**Second Story,** (fig. 4).—Hight of ceilings, 9 feet. The divisions in this story are similar in each of the five buildings, and consist of a hall, two large and two small rooms, and the necessary closets. The room over the store is used as a parlor. One of the small rooms in each house is fitted as a bath-room. The Stairs leading to the attics are placed above the main flights, with a door at the foot of each....**Attic,** (fig. 5).—The Attic of the corner building is partitioned off, and finished as shown, with ceilings 9 feet high, and has an inclosed stairway leading to the observatory. The latter is 7 feet square in the clear, and is also finished. Each of the four adjoining attics are plastered on their sides, but have no partitions....

Construction.—The Excavations are made in the earth for the corner building, to the depth of 5½ feet—and for the others, 3 feet. The Foundations are of 8-inch brick work. The Frame is of sawed, seasoned timber. The Main Division Walls between the houses are deafened, by filling with pale brick and mortar, "laid flat." The Sidings are of clear pine clap-boards, laid on rolled sheathing. The Mansard Roofs for front, one end, rear, and the tower, are slated; all other roofs are tinned. The interior walls and ceilings of the two full stories, are hard-finished on two coats of brown mortar; the balance is white-finished on one coat of "laid off" brown mortar. The halls, parlors, dining-rooms, and store, have stucco cornices and centers in each, and the openings to the bay-windows are arched and moulded. Marble Mantles are put in the principal rooms, and marble shelves and stucco trusses are put in the large bed-rooms.

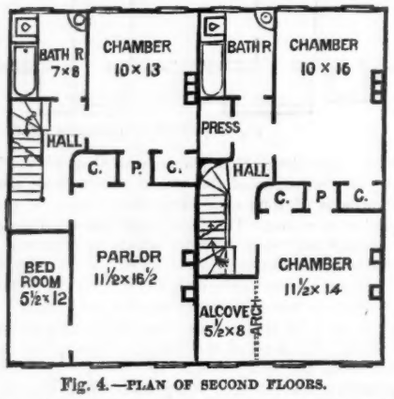


Fig. 4.—PLAN OF SECOND FLOORS.

Fire-place Heaters are put in the parlors, with pipes connecting them with registers in the second story. The bath-tubs and water-closets are cased with black walnut....**Plumbing.**—To give an exact idea of the plumber's work, the specification used as a guide in its introduction is herewith given:

There must be a hopper water-closet, and a wash-tub with three apartments put in each basement. A No. 2 range, with elevated oven, and water-back; a 30-gallon oval-topped copper boiler of croton pressure strength, resting on an iron Lockwood Stand, and an 18×30-inch iron sink in each kitchen; a bath-tub, 5 ft. long, lined with planished copper; a wash-stand, with 14-inch bowl, marble-top and wall plates; a pan water-closet, with bowl, pull, and crank attachments; and a tank, 1½×1½×3 feet, lined with sheet lead, in each bath-room. All supply pipes to be of galvanized iron, of the following sizes: The main of 1½-inch, 93 feet long, laid in the cellar bottom below the foundation walls, near the rear chimneys, one end to extend outside the building for street connections. Branches of ¾-inch leading from the main supply to the tank, with secondary branches leading to the hopper-closet, wash-tubs, and sink. All other water-pipes to be of lead, as follows: For cold water leading from the tank, to the bath-tub, water-closet, and boiler; and for hot water leading from the boiler, to the sink, wash-tubs, and bath-tubs, of A ⅝-inch: for connections between the water back and boiler of AA ¾-inch; and for wash-stands of A ½-inch. The water and hopper closets are to have traps of 4-inch, lead, connecting them with the soil pipe. Ventilating pipes of 2-inch tin, to lead from the 4-inch traps to above the roof, and have cone-shaped covers set 2 inches above their openings. The soil pipes to be of 4-inch iron, and lead from the second floor to the tile drains at the rear and below the cellar bottom. Waste pipes to be of 1½-inch, with traps, all of lead, leading from the bath-tub, wash-bowl, sink,

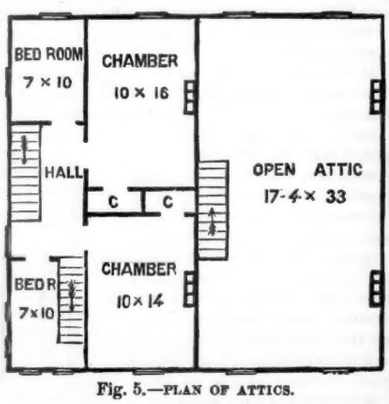


Fig. 5.—PLAN OF ATTICS.

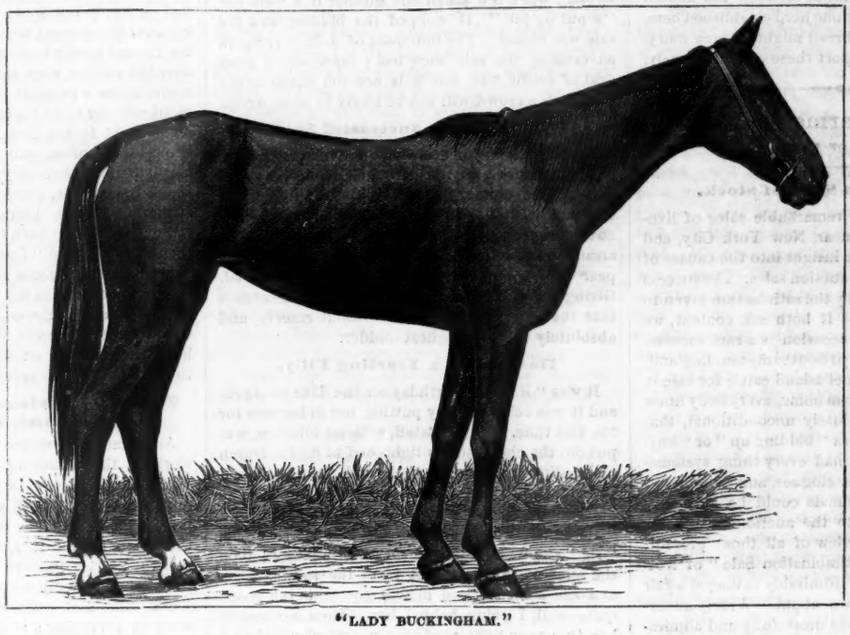
and wash-tubs, to the soil-pipe. Brass lever "stop and waste" cocks must be put in the branch supply-pipes near the basement floors, and in the pipes leading from the tank to the boiler. A "Fuller's" Tank Regulator to be connected with the supply-pipe leading to the tank. A "Sediment" Cock must be attached to empty the boilers, with pipes leading to the waste-pipes of the sinks. Finished brass ⅝ "compression" cocks, with flanges, and thimbles, must be provided for the sinks and wash-tubs, and similar cocks silver-plated, for the bath-tubs; plated swing cocks for the wash-stands. Self-acting compression cocks must be put in the connections with the hopper closets. Plugs, with chains, must be put in each wash-tub and bowl, and trap-screws put in all traps. Finally, all to be properly connected, in a substantial and workman-like manner, and warranted one year with ordinary use.

Estimate for cost of materials and labor:

Mason's materials	$2,200.00
Lumber of all kinds	1,950.00
Slate and Tin	450.00
Rolled Sheathing	50.00
Cornices, etc., from Mill	200.00
Porches and Stairs with Railings	800.00
Hardware and Nails	400.00
Mantles	360.00
Plumbing, Gas Pipes, and Sewers	940.00
Doors, Sash, and Blinds	725.00
Cartage	100.00
Carpenter's labor, not included above	1,300.00
Painting	475.00
Total cost of **Five** Houses	$10,000.00
Average cost, **$2,000** each.	

American Roadsters.

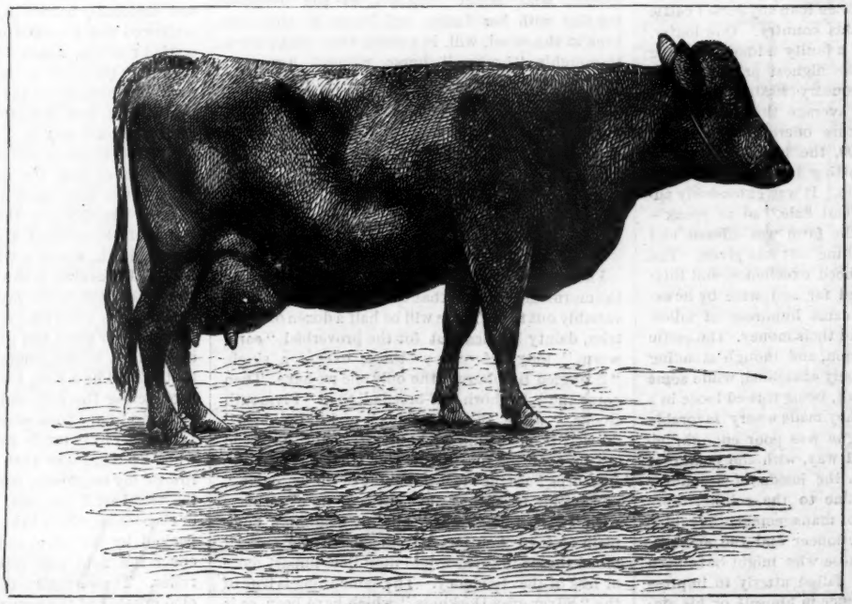
It is claimed by many advocates of the "trotting ring," that the renowned American race of roadsters or trotting horses owes its existence, or at least its excellence, to the so-called "trials of speed" in the ring, and that the interest in these trials or races is maintained by betting. It is also claimed that without the excitement of the betting all the interest in the race-course would subside; that there would be no races, no trials of speed; as a consequence there would be no demand for speedy horses, and there would be no efforts on the part of breeders to improve the race. Indeed, it is asserted that the business of breeding, whether professional or amateur, would cease to exist were races and betting abolished. It is only sufficient to broadly state this claim in this manner to show its absurdity and falsity. There is enough interest in the horse to make its improvement and increased value and usefulness, an object not only of profit, but of pleasure and excitement. There is nothing more agreeable or exciting to any one, old or young, than rapid motion. The savage and the most cultivated man alike enjoy riding upon or behind a fleet horse. So long as there are numbers of men who can afford to pay largely for their pleasures, the breeding of fast horses will ever be a profitable pursuit, and so long as men delight to skim over the road as fast as possible, there will be a demand for the best roadsters. Besides, this class of horses may be of great value in case of war, because, for attack or defence, well mounted cavalry is of the greatest moment. Decisive battles have been lost for want of good horses, and have been won by the overpowering force of well mounted cavalry. No nation possesses a better supply of horses than the United States, and the time may come when the maintenance of our excellent races of trotting horses may be of the greatest service to us. Much has been said by some few American writers, to disparage American trotters in favor of the English running horses; but not to speak of the uselessness of a galloping horse upon the road, the evidence is all in favor of the endurance, strength, and hardiness of our trotters, and against the qualities in these respects of the running horse. As a specimen of an American brood-mare, we give the above portrait with which we have been favored by Mr. Thomas Fitch, of New London, Conn. It is a copy of a photograph taken by Messrs. Schreiber, of Philadelphia. Mr. Fitch has been engaged in breeding roadsters and family carriage horses for many years, and we have seen some fine specimens in his stables. This mare, "Lady Buckingham," was bred in Canada West, and was sired by "Tippoo," out of a "Reindeer" mare. She has been driven faster than 2.30, but has never been trained, although speeded occasionally. Mr. Schreiber, the well known animal photographer, when he took this picture, thought it to resemble that of "Lady Thorne" more than any other he had taken, and the resemblance is certainly very striking. The produce of this mare so far, in Mr. Fitch's hands, has been two fillies, one 5 years old, named "Pneuma," by "Young Hambletonian;" she is over 16 hands high; in color, a dark-brown, with white hind feet, and has fine action. The other, 3 years old, named "Tacheia," by Rev. M. Murray's "Live Oak," is of large size, chestnut in color, with white hind feet, and is also very fast. The mare is now in foal, as are all Mr. Fitch's broodmares, to "Toronto Abdallah." Mr. Fitch has so far been very successful in breeding this class of horses for family use, devoting much care to secure a fearless and docile disposition. All his animals, both cows and horses, are pets, and remarkably gentle, as must always be the case, when the breeder is kind and gentle to them, never uses the whip, and has a natural inclination towards his occupation. This style of training is especially valuable for driving horses, in which docility, gentleness, and fearlessness add so much to the value. Mr. Fitch's method of breeding is worth notice. He writes, "I never breed from a mare of less weight than 1,000 lbs., nor more than 1,150, hight 15.2 to 16.1; choosing good form, color, and action. Both sire and dam should be as nearly perfect as possible; but a defect on the side of the sire is not so injurious as on the part of the dam. The dam produces and rears the colt, and she should be as near perfect as possible."—While all breeders do not hold this opinion, there is, nevertheless, much truth in it, and doubtless much injury has been caused by neglecting proper precautions in selecting mares for breeding. There has been far too much stress laid upon the importance of the sire and his power of overcoming defects in the dam.



"LADY BUCKINGHAM."

The Norfolk Polled Cattle.

One of the most useful efforts of a gentleman, who has interested himself greatly in the furtherance of an improved agriculture—Mr. A. B. Allen, of New Jersey, and one of the founders of the *American Agriculturist*—has been the attempt to popularize in America the polled Norfolk cattle. For some unaccountable reason there is a common prejudice against hornless cows. There is something in a name, and if these cows were not called "mooleys," but simply "polled" or "hornless," it is possible that the prejudice would not exist. Cattle that have no horns are more quiet, inoffensive, and comparatively harmless, and in case of animals that are to be shipped by rail, there is great economy in the freight, as a larger number of hornless animals can be carried in a car, than there can be of those with spreading horns, and there is no risk of injury from the horns of the quarrelsome beasts. Of the three varieties of polled cattle, the Galloway, the Angus, and the Norfolk, the last is the best for the dairy; the others being excellent beef cattle. The Norfolk cattle are red, and the above engraving, a portrait from a photograph given in the "Agricultural Gazette," London, accurately shows the form of a good specimen of this class of cows. The fine fore-quarters, deep hind-



NORFOLK POLLED COW.

quarters, and well developed udder, give unmistakable proof of the high milking qualities of the breed. The Norfolks are an old established breed, somewhat larger than the Devons, and of a very similar color, a bright red. They are better milkers than the Devons, yielding frequently 2,800 quarts, or over 6,000 pounds of milk, between the annual calvings. There is already one herd established here, and the qualities of the breed might induce dairymen and breeders to import these animals largely.

Among the Farmers.—No. 29.

BY ONE OF THEM.

About Auction Sales of Stock.

I have attended three remarkable sales of live-stock lately held in, or near, New York City, and think I have gained some insight into the causes of the success or failure of auction sales. The success of any sale is measured by the satisfaction given to both buyers and seller. If both are content, we may conclude that the occasion is a rare success.

When Edward Fowler, of Southampton, England, offered 24 head of Channel Island cattle for sale in New York, 3,000 miles from home, every body knew that the sale was absolutely unconditional, that there was no such thing as "bidding up" or "buying in." His auctioneer had every thing systematized—plain, clear, full catalogues, and a high platform up to which the animals could be led; they would thus stand close to the auctioneer and his assistants, and in plain view of all those present.

Peter C. Kellogg's "Combination Sale" of trotting horses was the most admirably managed affair I have ever seen or known about. Widely advertised, the stock offered was most fully and admirably catalogued; and every owner who sent a horse to the sale was pledged, over his own signature, not to permit any "bidding up" or "bidding in," or any unsubstantial bids, that every thing might be perfectly fair, and every sale absolute. The result was, a perfect freedom in bidding, as no one suspected any unfair dealing. In each of these cases, the fullest opportunity had been given to examine the stock. There was no doubt in regard to the pedigrees or ability to enter the breeding animals or their progeny in the herd register, or the trotting register, and so buyers being well informed, and confident of fair dealing, bid freely. The Jerseys sold at a higher average price than any Jersey cattle ever sold for before in this country. One heifer, and that, too, with quite a faulty udder according to my notion, brought the highest price a Jersey cow ever sold for in this country ($620). The horses, likewise, sold at a higher average than any similar lot of horses ever before offered, "Kentucky Prince" bringing $10,700, the highest price ever before paid for any trotting horse at auction.

Now as to the third sale. It was extensively advertised as a "Clearing Out Sale," so to speak—that is, every animal on the farm was offered, and a plausible reason for selling out was given. The animals were of pronounced excellence, and their fame had been trumpeted far and wide by newspaper writers. Buyers came hundreds of miles, ready and willing to spend their money. The cattle were in excellent condition, and though standing in their stalls, and not easily examined, while some could not be handled at all, being turned loose in a paddock, nevertheless, they made a very favorable impression. The catalogue was poor enough, being printed in a confused way, with the pedigrees wretchedly "mixed" on the inside of a country newspaper. When it came to the selling, there seemed to be no concert of management, the rabble huddled around the auctioneer and the animals, and thus forcing back those who might have been buyers. The auctioneer failed utterly to impress his audience with confidence in himself or his sincerity, or with the belief that the sale was a bona-fide one. As usual, the bids started slowly, and a noble bull was sold on the first bid for $100, when he would have been cheap at $400 or $500. After this, some bull-calves were offered, being started at $150 and $200 on bids received by the auctioneer (?) by telegraph, and declared sold without a bid being made upon the ground. This was a damper, and when the cows were brought in, the bidding was duller than ever; one or two were sold, when some more bids came "by telegraph" of $200 or $300 for calves hardly two months old. This seemed to convince the people that there was something wrong; not a few asked one another if it were not "a put up job." It stopped the bidding, and the sale was closed. The hundreds of dollars spent in advertising the sale were lost; there was a good deal of credit lost, and it is not too much to say that such a crowd will not be likely to come again.

What Makes a Successful Sale?

The essentials for securing a successful auction sale of live-stock are, therefore, as I conceive: 1st. The offer of animals of real value at a time when they are wanted. 2d. Not only advertising well, but telling buyers all they need to know in a well arranged catalogue, which must be, or at least appear to be, perfectly honest and truthful. 3d. Giving the people present at the sale the assurance that the animals are offered without reserve, and absolutely to the highest bidder.

Harnessing a Yearling Filly.

It was "Roxy's" birthday on the 12th of April, and it was celebrated by putting her in harness for the first time. The headstall, without blinders, was put on, the check-straps tightened to fit, the Dutch collar slipped upon her neck, and the saddle and breeching attached thrown upon her back. The breeching made her a little nervous, so I sent for a little sugar, which quieted her at once. In this "rig" she was led about for a few minutes; then the reins were drawn out from the saddle-rings, and she soon allowed herself to be driven about quite well, I going behind her. Then we geared her to a very light road-wagon, and she looked a little nervous, but her attention was at once taken up by the offer of sugar. She was led a few steps, and allowed to see clearly the wagon following behind her, and again sugar was offered. Soon she might be led anywhere drawing the wagon, at a walk or trot, up hill or down. I even drove her once around the house, but thinking the lesson sufficient for once, we stopped here. She was not in the least frightened from first to last, and I have not a doubt was impressed chiefly with the new experience to her sense of taste. Such an exercise repeated once in every fortnight, or even once a month, with slight variation, as she becomes familiar with her duties, and learns to stop and back at the word, will, in a short time, make her a thoroughly "broken" horse, without her even knowing it herself, she thinking only of the sugar she gets for good behavior. There is no lack of spirit in the filly, but so far, there is no show of wilfulness that does not yield to the mildest coaxing—nor any vice. It would, however, take but a very little jerking, and a cut or two from a whip, to turn her "milk of kindness" into curds, and make her as contrary as she is now pliable.

The Early Bird.

I have been watching the hens a good deal lately in the mornings, and find that the "Leghorns" are invariably out first. There will be half a dozen of these trim, dainty biddies, out for the proverbial "early worm," long before any others, except a single "Spangled Hamburg," the only one we have. Then come the "Leghorn half-breeds," then "Plymouth Rocks," while the "Cochins" and "Brahmas" do well if out within an hour after sunrise. Each season confirms me in the view that the "White Leghorns" are the most profitable of the egg-laying, non-setting breeds. I have little or no experience with "Brown Leghorns," but my neighbors complain of their fighting, and the dash of "game" blood that is in them would doubtless impart more or less of that tendency. The same thing is true of the "Silver-gray Dorkings," which have been, as is well known, crossed with "Duck-wing Games" to secure uniformity and brilliancy of plumage; the cocks are often great fighters. The "White Leghorns" I have had, seem little inclined to fight, and this is true of the "Hamburgs," yet possessing all the wide-awake, early-bird qualities of the "Games," which are certainly as active as any. I wish I could keep them, but they require so much attention, so quickly deteriorate if not carefully and intelligently bred, and "tested," too, that I shall allow a little experience, of a few years ago, suffice.

Clover Freezing Out.

For the first time since we have lived here, we find clover, in low spots, entirely frozen out. Passing over the ground about the last of March, I saw the ground nearly bare, and lying here and there all over the surface were slender roots, nearly as large round as one's finger at the upper end, and tapering rapidly to say $\frac{1}{8}$ or $\frac{1}{16}$ of an inch at the other, and six or eight inches long. Lifting, I found two or three inches often still in the ground, and could hardly believe that they were clover-roots, until I found upon a few, some half green, minute leaves struggling for life. I remember in Hartford County, Conn., we used to have the clover winter-kill, and that it was called "freezing out," but I certainly never before saw roots drawn up fully eight inches, as was the case with my clover this year. Timothy, on the same land, was thrown out, too, so that I do not believe it could live; but the frost seems to have had no effect on the Red-top, which appears to glory in the ruin around it.

Tillage, Plowing, Harrowing, Clod Crushing, and Rolling.

American farmers are averse to doing thorough work in the matter of tillage. We want plows which turn a furrow 14 inches wide, and then we rake over the surface with a broad harrow, and put in the seed. I do not see much objection to the use of a wide furrow in plowing, yet I believe that the narrow furrows of the English and Dutch plows are decidedly better for the soil, but I have found, time and again, to my cost, that half way work in preparing a seed-bed is disastrous. Last year, I hired a piece of work done, at a time when I could not well attend to it. A rough out-lot, upon which the moist season had brought up an abundant crop of Ragweed, Wild Carrots, Yellow Clover, Evening Primrose, Running Blackberries, with Pussy Clover, and Rattle-box, and fifty other things for aught that I know, the natural product of a gravelly and neglected soil. This I hired plowed and sowed with rye. I was not there to watch it, so now the rye looks as if it had been drilled in, following the furrows. The ground had been harrowed after plowing, but not half enough. Such land should be harrowed and cross harrowed, and diagonally harrowed, until the surface soil is mellowed and knocked out of the embrace of the myriad rootlets, which fill and hold it. The stones moved by the plow, at least those near the surface, should be brought to the top. There they protect the, at best, thin soil, from winds and frost, and the larger ones may be picked off. What there is of fine soil is settled and compacted, by the harrowing alone, so that the roots of the plants have a much better hold upon it. Besides, the harrowing exposes the roots of the sod and weeds to the action of the sun and atmosphere, to their almost certain death, which is what we desire.

This, I conceive, is the effect of thorough tillage by the harrow upon my poorest soil, and upon similar soils everywhere. If the ground is being prepared for grain and grass, these may be sown at once; then let the stones be picked off, and finally let the field be rolled, for the sake of still further compacting the soil, and leaving a surface less exposed to injury from winds and from washing.

I have rarely much use for a clod crusher, and when I have, I find that the wooden-toothed harrow of my neighbors, turned upon its back, to be the very best I ever saw. It might not do on clays or clay-loams, where baked clods, or masses of earth, packed by the plow, and half baked by the sun, cover the field and resist both the harrow and roller. These require the severe treatment of the clod crusher of the agricultural stores, which, with its disks of forks and zig-zags, has a good deal the look of a concentrated cast-iron thunderbolt. The harrow, on its back, is enough for corn stubble, sods, bunches of weeds, etc., which dodge harrow teeth, when the implement is right side up, but can not escape the beams and braces which are drawn actually in contact with the ground.

Disk Harrows.

I am interested in investigating these just now, but I can not pronounce definitely upon their merits. I have found that when an implement actually fails to do any particular kind of work well, though excellent for other things, that very fact will suggest its name. Now the disk harrows turn a number of little furrows beautifully, each tooth working like a small plow. They crowd into the mellow earth the strawy manure, sticks, chips, and such things not too large, and cover them nicely. They cover seed well, cut an old hide-bound sod, and by a peculiar action when drawn repeatedly over it, leave it in condition to renew itself to its manifest advantage. These things, I am sure, they do quite well, but they are called "pulverizing harrows,"—and that is the very thing I am in doubt about. Do the disks pulverize as well as square steel, or iron teeth, drawn through the soil? Perhaps they do in some soils, and not in others; perhaps they do in all soils, but I doubt it. There is one argument in favor of their doing good work in this way, which can hardly be gainsayed—that is, they draw very hard—that is, most of them do. I am glad to know that there is one now made which, like the well known Geddes' harrow, and some others, by means of a flexible joint in the center, accommodates itself to inequalities of the soil.

Talks on Farm Crops.—No. 16.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

"I don't see," said the Doctor," why you do not sow more Swede turnips."

"Because," said I, "Mangel-wurzels suit me better. Mangels are more nutritious than Ruta-bagas; can be made to yield a heavier crop; will keep later in the spring; do not impart any unpleasant flavor to the milk; can be sown earlier in the spring, and on a greater range of soils; are almost entirely free from attacks of insects and mildew, and, when once up, and fairly growing, will stand our hot dry weather far better than turnips."

"That is all true," said the Doctor, "but still the Ruta-baga or Swede-turnip has many qualities which ought to make it a favorite crop with you. Sometime ago, you made the remark that if you grew more cabbages than you could find a profitable market for, you had plenty of hungry customers at home that would consume all you had to spare. Your idea was to sell cabbages as long as the price would suit, and as soon as they were so cheap that it did not pay to market them, feed them out at home to your stock. That cabbages could be either sold or fed out was an argument in their favor. And, if so, then the same remarks will apply to Ruta-bagas. They often bring good prices in market. I have frequently paid 50 cents a bushel for them. And the books tell us that 1,000 bushels can be raised on an acre, and I have seen reports of crops of over 1,500 bushels per acre. Why, then, do you not raise them? Sell what you can find a market for, and feed out all you can not sell. Your mangels, of which you raise so many, can not be sold. There is no demand for them. They are good only for stock. They are not, like turnips, cabbages, carrots, parsnips, beets, etc., a table vegetable. If you raise Mangels you have only one string to your bow; with Rutabagas you have two; viz., sell when you get a fair price, and feed them when the market is glutted."

"I believe," said the Squire, "I will put in five or six acres of Ruta-bagas. They will pay far better than potatoes."

"That is so," said I, "provided you can get a good crop and sell them at a good price. But the probabilities are that you will not get a good crop."

"I would like to know why," exclaimed the Squire. "I have seen great crops of Swede turnips in Canada; our soil and climate are as good as theirs."

"True; and we *can* raise just as good turnips, but to do it we must adopt a better system of farming than is common in this neighborhood. Turnips require garden culture. The land must be dry, clean, rich, and mellow. Turnips require finer tilth than beets. The seed is small, and will not grow unless deposited in nice, fine, moist, mellow soil. And at this season of the year, in our dry climate, such a seed-bed does not come by chance. We must make proper preparation for it. Instead of this, we sow turnips on land that we happen to have unoccupied. If too wet for oats, corn, or potatoes, we sow turnips, and hope for a good crop."

"Yes," said the Squire, "and I have raised a good crop of white turnips in this way that cost nothing but the seed and the pulling."

"I know it; and that is why I said you would probably not get a good crop of Swede turnips. A chance good crop is demoralizing. You hope to do the same thing again. It is a species of agricultural gambling. To raise a good crop of Swede turnips, you must give them a chance. If the season is so favorable that you can grow a crop with no preparation and little labor, there will be so many turnips in the country that they will bring little in market. It is a good crop in an unfavorable season that brings large profits."

"Let us hear how you would go to work to raise a big crop of Ruta-bagas?" said the Deacon.

"Select the best land on the farm—that in potatoes or corn last year, and plowed in the fall, would be good."

"Hold on a moment," said the Squire, "I have a piece of land that was in wheat, and seeded with clover, which failed. How would that answer?"

"If the clover failed because the land was wet, it would not answer at all."

"It is a bit of good land," said the Squire, "rather sandy and somewhat poor."

"Well, plow it up at once, and cultivate and harrow and work it until you get the sod, if there is any, all on top and torn all to pieces. The more you work it the better. Then draw on 15 loads of good, rotten manure per acre. Spread it, and harrow it thoroughly."

"But the harrow will pull it into heaps."

"If it does, spread them again, and keep on harrowing and spreading until the manure is broken up fine and mixed with the soil. It would be well to use a cultivator to more completely mix the manure with the soil and to break up all lumps. Harrow once more after the cultivator."

"And I suppose," said the Squire, with rather a sarcastic smile, "you would use the roller also?"

"Certainly, if there are any lumps, I would roll and harrow and cultivate until the land was as fine and mellow as a garden. Then plow once more, harrow and roll. Then mark out the land in rows from 2 feet to 2½ feet apart."

"Can not you be a little more definite," said the Squire. "If 2 feet is as good as 2½, why not say so?"

"It depends somewhat on the land, and still more on the kind of cultivator you use. If you have nothing better than a common corn cultivator, you had better make the rows 2½ or 3 feet apart, as the cultivator will be apt to smother the plants. But if you have a proper cultivator that will run within an inch of the young plants without throwing earth on to them, two feet is wide enough for the rows. But unless the soil is very rich, it is perhaps best to make the rows 2½ feet apart. It is less work to cultivate and hoe; and you will get larger bulbs than if sown thicker."

"What is the use of a marker," asked the Squire. "A good drill makes its own mark for the next row."

"It is not much work to mark out a few acres of land with a good one-horse marker, such as we use for marking out corn. If the land is as mellow as it should be, the teeth will make a good deep mark, two inches wide. And now I want to tell you something that is worth knowing—something which is of the first importance to the turnip grower—something which will often double the crop. In fact, I have repeatedly known it to make all the difference between success and failure. It is very important in England, but it is still more important here, owing to our dry weather and our increased liability to having the young turnip plants destroyed by the little black beetle."

"What is it?" said the Deacon. "If it will keep off the beetles I would like to know it."

"It will not keep off the beetles, but it will so stimulate the growth of the young plants that they soon get out of danger. As soon as the plants get into 'rough leaf' the beetles do little damage. Mr. Lawes told me, thirty years ago, that if I would sow this article in the rows *with the seed*, he would insure me against damage from the beetle. Its effect on the growth of the young plants is marvellous.

"Its application here is comparatively new. Until within a year or two it was so high and so poor—or at least so uncertain, that a farmer could hardly afford to use it. But now we can buy it at reasonable rates, and no farmer who reads the *American Agriculturist* need be cheated. He can get a good article of guaranteed composition. I have used it for many years, and should have used it still more extensively if I had raised more turnips, and could have got a good article at anything like present prices. What we now want is a good drill that will sow this manure in the drill with the turnip seed. We have good drills that will sow it with wheat, and barley, and corn, but I do not know of a drill that will sow manure and turnip or onion seed at one operation. They have such drills in Canada, and possibly there may be such manufactured here, but I do not know of any."

"And until we have such a drill," said Charley, "it is necessary to use the marker."

"At any rate, we have not yet hit on any better plan on this farm. Mark out the rows 2½ feet apart, taking pains to have the rows not only straight, but deep and wide, and then go along the rows and carefully sow a little *superphosphate* in the mark. It is some work, and should be done by a careful man. It is a shame that we have no machine which will do it. But until we have, it will pay, on a small scale, to do it by hand. The superphosphate should be previously run through a sieve, and all lumps broken fine. If damp, mix a bushel of plaster with three bushels of superphosphate, or if plaster is not cheap enough, use sifted coal ashes. Sow 200 lbs. to 300 lbs. of superphosphate per acre; then drill in the seed, running the drill along the mark where the superphosphate is sown. We use a hand garden drill, and sow 2 lbs of seed per acre."

"One pound is enough," said the Deacon.

"Yes, and more than enough. A quarter of a pound per acre, will give all the plants needed, if they come up just where you want them, and the beetles let them alone. But all experience shows that it is well to sow turnips thick enough to insure a continuous string of young plants."

"If very thick," said Charley, "it will not do to let them grow much before hoeing, or they will all mat together, and be weak and spindling, and it is a good deal of work to single them out."

"You have just hit the nail right on the head. As soon as the rows can be distinguished, run a cultivator through them, and follow with the hand-hoe. It is quite a knack to hoe turnips properly and expeditiously. Our common hoes, while admirable for most purposes, are too broad, and slant too much towards you for singling out turnip plants. You want a hoe that you can push as well as pull. By heating the shank of the hoe, you can bend it out until it is nearly at right angles with the handle, or until it will push out the plants. The cultivator runs within 1 or 1½ inches of the plants, leaves very little work for the hoe, except to single them out. Strike the hoe through boldly, and this will probably leave a plant that will fall over towards the hoed space; if so, place the hoe between it and the other plants, and *push* out all the plants the entire width of the hoe, and cut the soil deeper and a little wider in bringing back the hoe towards you. This ought to leave another plant ready for singling out as before. A turnip plant has more roots than a beet or mangel-wurzel, and you can cut closer and deeper in hoeing turnips, than in hoeing beets or mangels. In hoeing beets, more or less of the singling out has to be done with the fingers, but turnips can be singled out with the hoe. It requires some patience and skill, and possibly some patience and faith. Hoeing turnips is like swimming—a boy who once learns the art never forgets it."

"In regard to the distance apart," said the Doctor, "I found, when I was in England, there was a tendency to thin out to a less distance apart than formerly. Those who prided themselves on growing very large roots, made the rows 2½ feet apart,

and thinned out the plants to 18 inches distant in the rows. But many farmers thought it better to have the rows two feet apart, and thin out to 12 inches in the rows. The roots are smaller, but they think they are more nutritious. In the former case you have 11,616 turnips on an acre, and in the latter 21,780 turnips on an acre. If the former averaged 5 lbs. each, which is not by any means a large turnip, there would be 29 tons per acre; and in the latter case, if the bulbs weighed 2 lbs. each, there would be 21¾ tons per acre. And it is thought that 20 tons of the small roots contain more nutriment than 30 tons of the large."

"In this country we are not at all likely to thin out too much. The prevailing error is in the other direction. It seems such a pity to cut out a dozen nice plants and leave only one, that I have hard work to persuade my men, when hoeing by the day, to use the hoe boldly. If hoeing by the acre, they would soon learn to thin out severely."

"Do you mean to say," said the Squire, "that you would leave only *one* plant to each 15 or 18 in."

"That is exactly it; or if you do not want large roots, leave one at every 10 or 12 inches. For later use, or if sown late, it is perhaps better to thin out to 10 inches apart. I once sowed Swede turnips as late as the 4th of July, and had a good crop, and of splendid quality for the table. For feeding to stock, it is, of course, better to sow earlier—as early in June as you may be able to get the land ready."

Hints and Helps for Farmers.

BY L. D. SNOOK, YATES CO., N. Y.

GRAIN BINS.—Without proper bins for grain, much that is hard earned in the field is easily wasted in the barn. The floor of a granary should be of doublehemlock boards one inch in thickness, dressed and tongued - and - grooved. Sometimes it may be desirable to lay a floor of plank, and cover this with a layer of hydraulic-lime cement three-quarters of an inch in thickness. Either of these floors will be rat-proof. There should be a window in every granary, with fine wire gauze shades to exclude weevils and grain moths. Figure 2 is a plan of a granary; figure 1 shows the mode of constructing the bins. The posts (*B, B,*) have grooves, into which the boards are slipped as the bins are filled, and they can be removed when not needed. The boards should be numbered, that they may always be properly placed. Portable steps (*E*) are very convenient when the bins are deep.

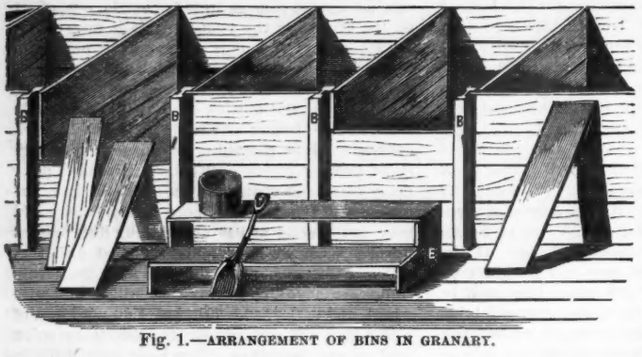


Fig. 1.—ARRANGEMENT OF BINS IN GRANARY.

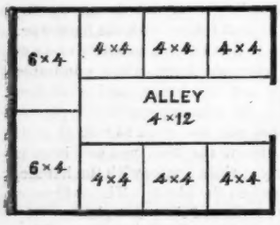


Fig. 2.—PLAN OF GRANARY.

Fig. 3.—SIMPLE BRUSH HARROW.

BRUSH HARROWS are cheap and useful for many purposes, such as leveling the surface of fields newly planted with corn, or potatoes; for mellowing the soil when it is crusted, and for covering light seeds. Figure 3 shows a very simple one, made of a scantling (or a round pole) 9 feet long. Holes are bored 6 inches apart; small branches are inserted into these, and wedged tightly. Another method, seen in figure 4, is to place the brush between two planks, which are afterwards drawn closely together with screw bolts. If it is desirable, a farmer may make a riding harrow by fastening bundles of brush to a long axle by means of wire, and affixing a seat to the axle (figure 5).

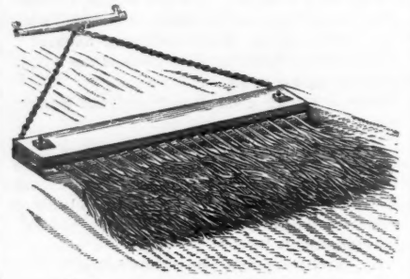


Fig. 4.—IMPROVED BRUSH HARROW

HAULING MANURE.—In Western New York, where some farmers haul out several hundred loads of manure, the following plan is adopted. Two or three wagons are used, one being left in the yard to be loaded, while the other is drawn to the field and unloaded. Thus it is necessary that the unloading be done quickly. For this, the box is removed, and bottom planks (*W*, fig. 6,) with side-boards a foot wide, are provided, upon which cleats (*T, T,*) are nailed near each end to prevent splitting. A notch is cut out, as at *A*, that the board may be easily lifted from the wagon, as is shown in the engraving. With this arrangement of the wagon, one person can unload the manure, by removing the side-boards and pulling or pushing the load off in heaps upon each side with a manure hook.

Fig. 5.—BRUSH HARROW WITH SEAT.

STAKING A RAIL FENCE.—To stake a worm rail fence, proceed as follows: When the foundation is laid, and the fence is three rails high, stakes are to be driven in the angles close to the rails, and then fastened with a piece of annealed wire, as shown at figure 7. A few more rails are laid, and the stakes are again tied; and to finish the job, a wire should be fastened above the top rail. In figure 8, the stakes are set and wired as the fence is built.

An English Milk Farm.

In the management of a milk dairy, the profit is made up of a number of very small items. A few of these small matters are sufficient to cast the balance upon the side of loss, instead of that of profit. It is, therefore, important that every detail in the work of a milk farm should be carefully scrutinized. Only one-tenth of a cent per pound in the cost of the milk, in a year, amounts to three or four dollars per cow, and a loss or gain of one quart per cow, per day, will amount to ten dollars in the year. The objects to be gained in a milk dairy are: to keep the expenses as low as may be, and to increase the product as much as possible. Every thing tending to secure these objects, is valuable to the dairy farmer. There are few farms from the management of which we can learn so much as from some of the best conducted English milk farms. Generally the best milk farms in America are managed very much upon the same system, because there is no secret in selecting the best cows, or in choosing the best milk-producing food, but we do not make so much use of roots and oil-cakes as do the English farmers, and these are the cheapest and best milk producers. An outline of the management of an English dairy, which is of great interest, is given in the "London Live Stock Journal Almanac." This farm is in South Derbyshire, a limestone country, in which the grass forms the best and most nutritious pasture in the world, and with which none of our pastures can bear comparison. With this exception there is nothing in the system of which we can not avail ourselves if we wish. The cows are nearly all purchased when fresh, and sold off for fattening when failing in milk, but are not fattened on the farm. No calves are reared, except a few bred from the best milkers. The cows are well fed the year round, to keep up a regular and maximum supply of milk. In summer the feed is pasture, in the fall, the aftermath is fed, along with cabbages, until winter feeding begins. This consists of hay, brewer's grains, roots, cut straw, and 5 or 6 pounds of oil-cake, or corn-meal, per day. The roots (Swedes and Mangels) are pulped and mixed with the grains and the chaffed straw; 8 cents a bushel is paid for brewer's grains. Tares are sown in May for soiling, and if the grass is abundant, these are not fed, but are cured for winter feed. A large portion of the farm is arable, and only 40 cows are kept on the 300 acres. A large quantity of purchased food is used, but, as may be expected, very little of fertilizers is purchased. The advantage, upon milk farms, of this system of using artificial

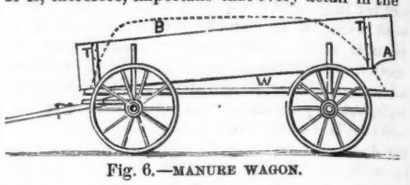


Fig. 6.—MANURE WAGON.

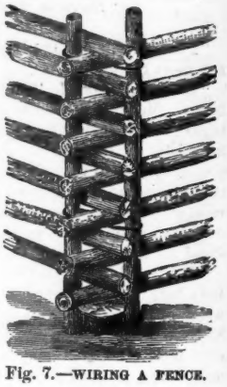


Fig. 7.—WIRING A FENCE.

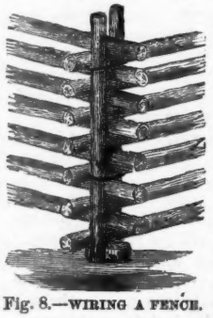


Fig. 8.—WIRING A FENCE.

foods of the richest character, is very great, because the larger portion of them is returned in the manure, and that which is carried off in the milk is quite inconsiderable. Thus a well managed milk farm does not deteriorate in fertility, but both it and its owner grow rich together. The consumption of milk is steadily increasing, and upon those farms from which there is easy access to the large cities, their production can, by good management, be made profitable, both in its immediate returns, and in the indirect addition to the value of the land.

Plan of Stables for a Small Place.

A plan for a small stable, to accommodate a cow and two horses, with poultry-house and pig-pen annexed, is often asked for and we give one. Figure 1 is the ground plan, 34 feet long, and 18 feet wide. The central part comprises two horse stalls, 5 x 10 feet, and a loose box for a cow, 7½ x 10 feet, with a passage, in which is a feed bin, room for a fodder-cutter and feed box, and stairs to the hay loft. Over the feed box is a hay-shoot from the loft above. The poultry-house adjoins the passage, from which two doors open into it. This house is 18 x 12 feet, and has a sloping front of glazed sash. The roosts are shown in the engraving by the three bars in each appartment. The poultry-house is divided into two parts, so that one can be appropriated for young chickens and brooding hens, which is a very convenient method, and avoids the loss of a single chick. At the other end is a yard for manure, with a pig-pen at the rear. There are two openings from the stable into this yard, for the purpose of cleaning out the manure. Figure 2 shows an elevation of the building. Generally a plain structure will be desired, but, if necessary, an ornamental roof may be made, and the building finished more elaborately than is here shown. The cost of this building may be from $200 upwards, according to its style and the materials used.

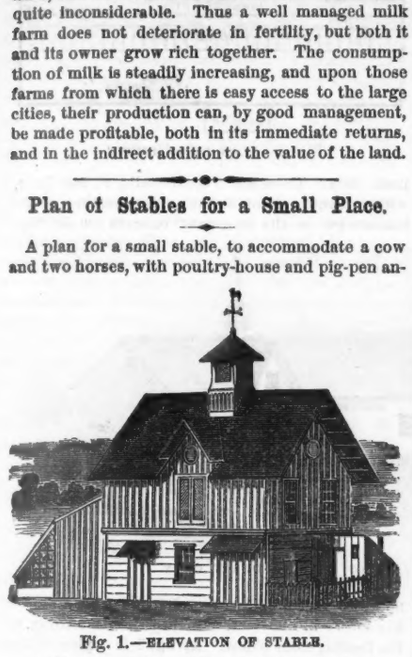


Fig. 1.—ELEVATION OF STABLE.

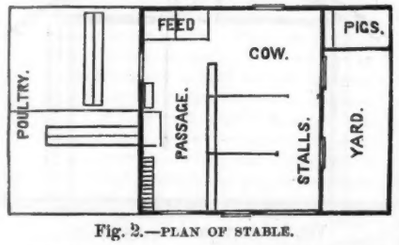


Fig. 2.—PLAN OF STABLE.

An Injection Nozzle.

The common method of giving an injection to an animal, by means of a bladder, and a piece of elder wood, from which the pith has been removed, is sometimes injurious, and at the best is clumsy. A very neat instrument for the purpose has been devised by Whitman & Co., the makers of the Fountain Pump. This nozzle, shown in the accompanying illustration, is intended to be attached to the Fountain Pump. The liquid to be injected is prepared and put into a pail, is administered in the ordinary manner, the nozzle being oiled or greased. For worms in horses the usual injections of salt and water, or those of warm water, or soapy water for inaction of the bowels, in either cows or horses, may thus be given with ease and safety.

INJECTION NOZZLE.

A Simple Feed-Cooker.

"A Subscriber," sends us his method of cooking food for a few pigs, as follows. An ordinary iron kettle is provided, large enough to admit the chine of a meat barrel or tierce, and arranged with a fire-place beneath it. A number of holes are bored in the bottom of the barrel, and two strong rings are affixed to the sides. The barrel is placed upon the kettle, fitting closely inside the rim, and is filled with roots and meal. A close cover is fitted to the top, and the contents of the barrel are cooked by the steam from the kettle. The arrangement is shown in the accompanying engraving. The barrel may be lifted off when the feed is cooked, by means of a small crane and windlass, and placed upon a wheelbarrow to be carried where it is to be used.

FEED-COOKER.

Foot-Power Saws and Sawing.

For small work a hand or foot-power saw will often be found very useful. But unless a machine of this kind is kept in the very best order, the power needed to run it is so much increased that the work is too hard for either the hand or foot. Some remarks in reference to the machine in question, and the proper method of keeping the saws in such order that they will work with ease, have been sent to us by A. I. Root, of Medina, Ohio, who has had considerable experience in the use of small wood-working machines. The sawing machine is shown at figure 6. It is furnished with a pair of feeding rolls and saws of different sizes. In using this saw, or in fact, any saw, it should be remembered that the points of the teeth only do the cutting, and that, to secure ease in working, the sides of the saw should not rub against the wood. The proper observance of this principle is the whole art of keeping a saw in order. The shape and disposal of the teeth should be such that the sharp points pare off a slice of the wood and cut an opening large enough to prevent friction upon the sides of the saw. There is a certain position in which the teeth make a smooth cut, otherwise the grain of the wood is torn and not cut, and a greater force is required to tear the fibers than to cut them smoothly. The proper and improper pitch of the teeth for a rip-saw are shown in figure 1. The center of the saw at *H* should bear a constant relation to the angle of each tooth, which should be on a line which is called a tangent from the circumference of the inner circle, shown at *G*. When a straight edge is laid against this circle, it should fall upon the underside of each tooth. Then if the distances between the points of the teeth are equal, they will all fall exactly upon a line which would form the circumference of a circle concentric with the circle, *G*. On the other side of the diagram are some teeth which are wrong, but they are frequently seen as bad as in this specimen. A saw filed in this unequal manner will require more than double the power to drive it. When a hand or foot-power is used, the difference is sufficient to prevent the operation of the saw. For a cross-cut saw, the shape of the teeth is entirely different, but can not be considered at this time. In filing the teeth to get a sharp point, the work should all be done from the underside. If the teeth are filed at the top, much of the saw is wasted. The top is worn away in cutting the wood, and if the underside only is filed away in a proper manner, the body of the saw is cut away evenly and the circumference, shown at *F*, figure 1, is gradually carried towards the center until the teeth become too small, and the saw is worn out or used for smaller work. That the saw is wasted by bad filing, is shown at figure 2. By filing beneath the points of the tooth, first at *A*, *D*, would in the course of time be carried to *C*, *E*, but if filed from the top the points would in the same time be brought to *B*, *F*. It is clear if, in addition to the wear by work is added the loss by filing, that the saw will be worn out more rapidly than by work alone. For filing small saws, files of the shape, shown at figure 3, should be used. The angle of the file is precisely the same as that of the saw when the flat part rests upon the top of the tooth. In use it is never made to cut down, but only to preserve the shape and angles of the teeth. In setting the saw only enough set should be given to clear the blade; and the set should be perfectly regular, or the work will be more difficult. A self-regulating set is shown at figure 4. The screw at the top gauges the hold upon the tooth, and by bringing the handles together every tooth is bent alike. The proper set is exhibited in figure 5, the

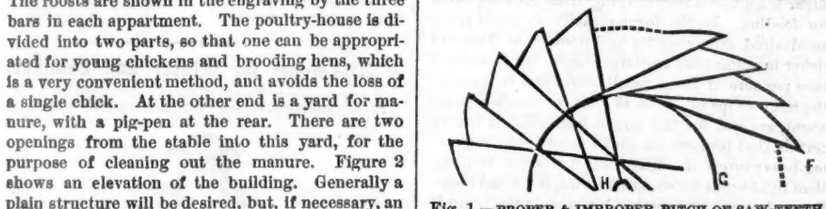


Fig. 1.—PROPER & IMPROPER PITCH OF SAW-TEETH.

Fig. 2.—POOR TOOTH.

Fig. 3.—FILES FOR SAW.

Fig. 4.—SELF-REGULATING SAW-SET.

Fig. 5.—SET OF TEETH.

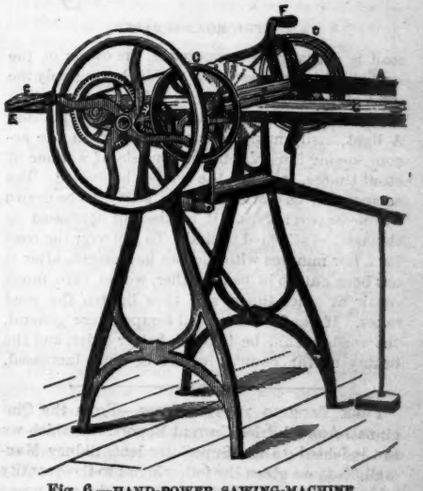


Fig. 6.—HAND-POWER SAWING-MACHINE.

dotted lines showing how the teeth, *A*, *A*, are bent so as to be regular, and to give a certain amount of clearance for the saw. To make a small saw cut smoothly, the teeth should be finished off with an oilstone These are made of all necessary shapes to trim out the angles and to level the points of the teeth. To smooth the edges of the teeth, lay an oilstone on the table against the saw, and turn the saw backward. For finishing fine work, small planing machines are made, one of which is shown at figure 7. These machines are made now at remarkably low prices, so that there is scarcely a workshop that can afford to be without them; while for such small work as the making of surplus honey and fruit boxes, and light crates, the hand-

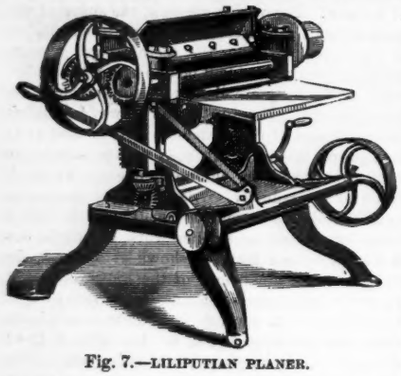
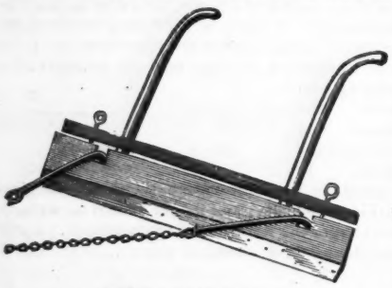


Fig. 7.—LILIPUTIAN PLANER.

saw machines and planers are indispensable. But to use them with economy and satisfaction, the owners must know how to keep them in order.

A Road Scraper.

A light road scraper would be found very valuable on every farm for repairing the private roads. It may also be used, when necessary, for running over the public road in front of the farm. The appearance of the farm is greatly improved by the neat condition of the road in front of it, and as the



A USEFUL ROAD-SCRAPER.

road is actually the property of the owner of the land by which it passes, the public having only the right of using it for traveling, it is very proper that the real owner should keep it in good condition. A light, easily made scraper is shown in the accompanying illustration. It consists of a frame of stout timber, in which the scraper is pivoted. The scraper may be 4 or 8 feet wide, as it is to be drawn by one or two horses. It is raised or depressed by the handles attached behind. To run over the road for a few minutes with such an implement, after it has been cut up in bad weather, would save much repair at other times, and thus lighten the road taxes. If the use of a road scraper were general, the roads would be in much better order, and the beauty of the country would be much increased.

PORK PACKING IN THE WEST.—From the Cincinnati Annual Price Current Report, for which we are indebted to the Superintendent, Sidney Maxwell, Esq., we glean the following as to the quantity of hog products packed in the West the past year:

No. of Hogs packed.	*Average net weight.*	*Yield of Lard.*	*Cost per cwt.*
6,505,446	226.4 lbs.	38.61 lbs.	$4.99

This gives a gain of 1,401,138 in the number of hogs packed; of 10.12 lbs. in the average weight, and of 4.53 lbs. in the yield of lard, with a decrease of 19 cents in the cost per 100 lbs. 723,368 bbls. of pork were packed, an increase of 86,101 bbls. over last year. The above relates to the winter packing only. The total quantity packed, from March 1st, 1877, to March 1st, 1878, was 9,048,566 hogs. The winter product of lard was 761,192 tierces, of 800 pounds each, and of cured meats 980,000,000 lbs.

The Beet-Sugar Question.

A new mania seems to be imminent. Agricultural journals, and others not agricultural, are everywhere agitating the subject of beet-sugar, and deluding themselves and their readers into the belief that a great industry, heretofore neglected, is about to be introduced. Circulars are being spread abroad by public-spirited individuals, pointing out how easily sugar can be made from beets, at every cider mill and cheese factory; if only the beets are grown. It is all a great mistake. We can grow the beets fast enough, and too fast, but the manufacture of the roots into sugar is a very intricate, chemical as well as mechanical, operation, requiring the greatest skill and costly machinery. The beet contains abundant salts which interfere with the process of crystallization of the sugar, unless they are got rid of by a careful operation; besides, upon some soils, the beets contain so much of these salts as to render their manufacture into sugar impossible. It would be well for farmers to give a very cautious hearing to those who try to induce them to take stock in beet-sugar factories, and to engage in growing beets for manufacture. To grow beets for sugar is quite a different thing from growing them for feeding. In the former case only small roots are desired, averaging 2½ to 3 pounds, as these are richer in sugar than the larger ones. Only about 8 tons per acre of these small roots can be grown; the large crops of 30 or 40 tons, so much written about, are not for the sugar business. It is very certain that farmers can make more profit in growing heavy crops of sugar-beets for stock feeding, than light crops for sugar factories, if we had these. It may become a profitable business in time, but it must be remembered that the success of the manufacture in Europe, so much talked of, is the result of nearly a century of costly and persevering effort assisted very liberally by Government aid. It can hardly be supposed, that here, where labor is dear and private enterprise must work alone, we can make an immediate success. Pioneers generally fail, and others build upon the ruins of their fortunes. Still there are always sanguine individuals who are ready to make experiments, and it is possible that through their failures the way to succeed will be learned. At present, however, it is certain that the risk of loss in the manufacture is greater than the probability of gain.

An Orange Co. (N. Y.) Dairy Barn.

The accompanying engravings are to illustrate a milk-dairy barn, belonging to J. E. S. Gardner, of

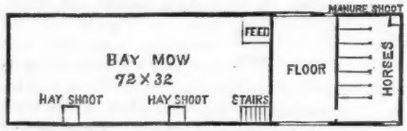


Fig. 1.—PLAN OF MAIN FLOOR.

Orange Co., N. Y. This barn is 110 feet long, 32 feet wide, 20 feet high, with a basement 9 feet high. The building is on a slope, facing west. In front is a pit for preserving brewery grains, 30 feet long, 9 deep, and 16 wide. The interior arrangements are very convenient; at figure 1 is shown the

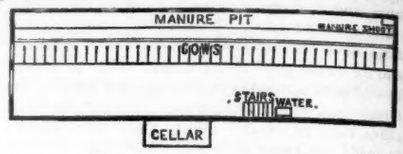


Fig. 2.—PLAN OF BASEMENT.

main floor. There are 6 horse-stalls, 16 feet long, with a manure-shoot in the corner, leading to the manure-pit in the basement beneath; a driving-

Fig. 3.—VIEW OF ORANGE COUNTY BARN.

floor, 20 feet wide, with stairs and feed-room; a hay-mow, 72 x 32 feet, with hay-shoots leading to the feeding-floor below. At fig. 2 is a plan of the basement, in which are 36 stanchions along the center, with doors at each end; in front of the cows is an alley for feeding, 16 feet wide, through which a wagon can be driven from end to end. Behind the stanchions is a standing platform for the cows, with a drop 15 inches wide, then a walk of 3 feet, and a manure-pit 7½ feet wide and 4 feet deep, with a cement floor. In the rear are several sliding-doors, one in each bent, for removing manure. The pit for grains is covered with railroad iron and flagging. A perspective view of the barn, showing its situation, is given in figure 3.

A Milk-house for Winter and Summer.

In response to several requests we give a method

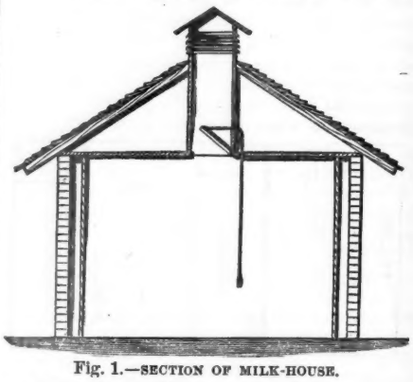


Fig. 1.—SECTION OF MILK-HOUSE.

of building a brick Milk-house, with an air-space in the walls to keep it cool in summer, and warm in winter. Figure 1 is a sectional drawing. The outside is of brick, laid lengthwise, so as to make the wall 4 inches thick; the corners are to be well bound together at each alternate row of bricks; the inner wall of lath and plaster is supported on 2 x 4-inch upright studs, or furring pieces, 16 inches apart from centers, placed edgewise, to leave an air space of 4 inches. The laths are nailed upon these. The furring pieces rest upon the foundation of brick, bedded in cement, laid crosswise, to make an 8-inch bearing. The floor should be cov-

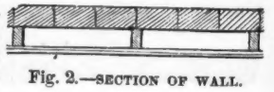


Fig. 2.—SECTION OF WALL.

ered with cement-concrete, 3 inches thick, level with the foundation, and a close base-board should be nailed over the plastering. Finish the plaster to the floor before nailing on the base. The studs are spiked to the beams overhead, which are laid 16 inches apart, and also to the rafters. This strengthens the building greatly, and allows the air-space of the walls to open into the roof. A ventilator, carried from the ceiling to the peak, as shown, is opened or closed by a trap-door, with a cord. The house may be 16 feet square, and 12 feet high in the clear, which will give ample room for ventilation and space for the milk of 50 to 100 cows. There should be only one window on the north side, shaded by a green blind, and kept closed. It would add greatly to the coolness of the house if the walls were covered on the outside with climbers, such as the Hop-vine, Wistaria, Virginia Creeper, or other quick-growing vines, or running roses may be used. In preference to any other roof, we would select one of red tiles, which are cooler than slate, and so absorbent that a light shower, or a slight drenching with water, with the Whitman Fountain Pump, upon a hot day, would cool the interior greatly. A section of the wall, fig. 2, shows the air-space.

A Useful Gate, not Patented.

"H. S. B.," Bailey, Tenn., sends a sketch of a gate which may be made very useful for various purposes, such as separating small animals from

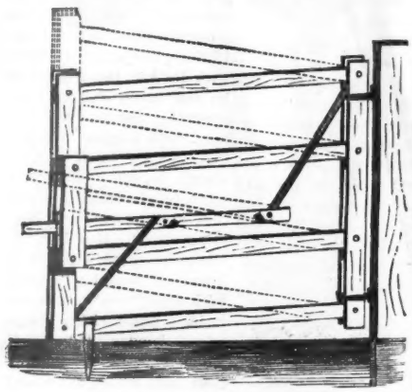


Fig. 1.—SELF-CLOSING GATE.

larger ones, and has the advantage that it will fasten itself when closed. The gate is made of strips one inch thick, and 3 or 4 inches wide, as shown at figure 1. The latch is fastened as shown, by bands of hoop-iron riveted to the upper and lower corner. When the latch is lifted, the gate is raised, as shown by the dotted lines, and is held in this position by the latch resting upon a support shown at *a*, figure 2. In this position the gate is raised from the ground, so that small pigs or lambs may pass under, and it also swings clear of the peg driven into the ground to hold it when lowered. When the gate is swung to, and the latch strikes the post, the latch is moved from the support and drops, letting the gate down on to the ground. By driving pegs into the gate post, upon which the latch may rest, the gate may be raised to any desired hight. The framework of the gate is fastened together by carriage bolts, screwed up loosely, so that the gate will work easily.

Fig. 2.

Hens and Ducks in the Fruit-yard.

Young chickens and ducklings will get a large part of their living from insects, if they have the opportunity. It is a good plan to give up the fruit-yard, or a part of the orchard, to poultry. Chickens and ducks want shade as well as sunshine, and thrive better for it during the summer. They are always on the watch for worms and millers, and greedily devour every insect that falls from the trees. They are fond of fruit, and consume the windfalls, which harbor the insects that are so destructive to fruit. A brood of chickens left under an apple tree afflicted with Canker Worms or Caterpillars, will reduce the stock, and finally exterminate them. One of the most successful fruit-growers we are acquainted with, keeps poultry constantly under his trees. The apples and pears are fair, and he has paying crops every year.

The Value of Leached Ashes.

Experiments with leached ashes continue to work favorably, and to win friends, every year. There has been a large reduction in price to correspond with other fertilizers in the market. Formerly, they sold at 20 to 25 cts. a bushel, delivered at the landing, on tide water. Our farmers now get them at 17 cts., delivered at the same place, in quantities to suit purchasers. They have been used a great many years by the farmers and market gardeners of Long Island, and later by the same classes in the shore towns of Connecticut, and on the tobacco farms farther inland. The leached ashes used come mainly from Canada, and very largely through Oswego, whence they are shipped by canal boat without change until they are landed at the harbor near the farms where they are to be used. This refuse from the asheries contains considerable quantities of potash and phosphoric acid, which have a wonderful influence upon exhausted soils. We notice that when this fertilizer is once introduced, it retains its hold upon the confidence of cultivators, and they buy ashes every year, frequently increasing their orders. The onion-growers along the Sound make large use of leached ashes—buying sometimes by the thousand bushels. This is one of the best indications of its value for that crop. Fruit-growers are much pleased with its effect upon the growth of their trees and shrubs, and upon their productiveness. It improves the size and quality of all the small fruits. It is especially beneficial upon strawberries and grapes. The use of this fertilizer is gradually increasing among the farmers who are more remote from the harbors where the ashes are landed. Their effect is immediately visible upon old pastures and meadows, spread broadcast, as a top-dressing; but they act more satisfactorily if applied to the crops at the time of seeding down. They not only largely increase the crop with which the grass-seed is sown, but their influence is visible for many years afterwards in the increased yield of grass. A farmer who has used ashes freely for twenty years, upon a hard, worn granite soil, says they will give an increase of hay, upon a meadow newly stocked, for eight years, and then, if the field is plowed again, they will show the effect of the ashes for six years longer. He applies about 100 bushels to the acre on land that he designs to keep in meadow, and about 75 bushels to pasture land. It is particularly satisfactory as an application to the rye-crop—even in so small quantities as 20 bushels to the acre. He has reclaimed a large breadth of old fields given up to the growth of bushes, briers, and brakes, and made it a fine pasture by the rye-crop and ashes. He considers leached ashes his most efficient helper in transforming an exhausted, worn-out farm into one of great productiveness, giving a fair reward for his capital and labor. CONNECTICUT.

A Sure Cure for Poultry Lice.

Lice are the great pest of the poultry house. Hens left to range about the farm or garden will keep clean by wallowing in the dry dust. But for a good part of the year villagers have to keep their hens in confinement, and very soon, without constant watchfulness, lice appear, and if the poultry house is near the barn, or within it, the vermin spread to the cow and horse-stables, and make trouble there. White-washing, if it were attended to every month, would be effectual, if the wash penetrated all the cracks. But this involves a great deal of labor, and it is difficult to reach all the crevices. There is the same objection to sulphur and tobacco smoke. A few of the lice are generally left for seed after every smoking. The best remedy we have ever applied is crude petroleum, or, if more convenient, the common kerosene-oil used for lamps. This is always at hand, and a few minutes labor with the oil-can will rout the enemy. Generally one application is enough to destroy them. We apply it directly to the perches, pouring a continuous stream from the spout. The hens get this oil upon their feet and legs, and it is rubbed all over the feathers. It is penetrating, and the odor seems to be exceedingly offensive to all insects. We have had no lousy hens since the application of this remedy.

Use of Agricultural Papers.

I have been a constant reader of agricultural papers for thirty years and more, and have found the following benefits:—1. They are a most agreeable change from the labors of the field and the garden. Every man wants diversion of some kind, and finds it in change of occupation. Reading is amusement to a man tied up to the daily routine of the farm. His mind is stimulated by the perusal of the pages of his favorite journal, by its beautiful illustrations of animals, of flowers, and shrubs, of cottages and garden walks, of new implements, of husbandry, and by its records of the experiments of other practical farmers; he is refreshed and kept cheerful and contented by this constant communion with other tillers of the soil. 2. They add largely to our stores of knowledge. Some of the best minds in the country write habitually for these papers. Some of them have had years of training in the best scientific schools of this country and of Europe, and tell us how crops grow, what tillage does for our crops, what are the best rations for horses and working cattle, for fattening animals, and for milch cows; what fertilizers our soils need, and how this want can be most economically supplied. They are full of communications from practical farmers, in all parts of the land, giving their methods of husbandry, and the reasons for them. No man can read habitually these teachings without gaining much useful knowledge in his husbandry. 3. They save much waste upon the farm, in the purchase of seeds, fertilizers, stock, and tools. Seeds are often adulterated, sometimes with sand, but oftener with old seed, or seeds of weeds, which, if sown, greatly increase the cost of tillage and harvesting. The papers warn us of these adulterations, show us how to detect them, and where to purchase a pure article at fair prices. In the single item of fertilizers, any man who has occasion to use them gets back his subscription for a good agricultural paper, many times over every season. In the Connecticut Experiment Station, which is mainly a creation of agricultural journalism, there is a complete safeguard against fraudulent manures. A reading farmer can know just what he buys, and not invest in sand or swamp muck. Millions of dollars are saved to the country every year by this Institution. Manufacturers of fertilizers are compelled to sell by analysis. The best implements of tillage, and of harvesting, are brought to the knowledge of the mass of farmers through the press. If there is a fair, a plowing match, a trial of reapers or mowers, or of implements of tillage, the papers give the results in detail, and he has the data for an intelligent opinion. Inventors have shifted the burden of growing crops, and harvesting them very largely, from human hands to brute muscles. The horse cuts, cures, rakes, and stores the hay harvest. A good tool often pays for itself in a single season. The results of the large increase in the circulation of our agricultural papers are seen all over the land, in more attractive homes, in cleaner and more productive fields, in better orchards, in more abundant harvests, in a better fed, better clad, and better sheltered population. It is money in the pocket of every farmer to take an agricultural paper and read it. CONNECTICUT.

The Ponds Suitable for Black Bass.

Numerous inquiries are received about fish ponds, especially ponds suitable for Black Bass. As these can be raised where trout can not be, the general expectation seems to be, that Black Bass will flourish in any horse-pond that does not entirely dry up in the summer. The natural habitation of this fish is the St. Lawrence basin, where it flourishes in the large lakes, and in the streams that feed them. Its favorite places of resort are upon rocky shores, and in the rough water at the foot of water-falls. It is a large, gamy fish, and wants plenty of room, and an abundance of live bait. It is an enormous feeder, and will hold its own in a well stocked lake against all other kinds of fish. It is the only fish we know of that will clear a pond of Pickerel. It requires gravel in some part of the water in which it is planted, for breeding purposes. It makes nests like the roach, in which to lay its eggs, and in the Northern States, spawns in May and June. If the gravel is not there as a natural deposit, it must be supplied artificially. Of course, all efforts to plant a fish of these habits in small, artificial ponds, stagnant during the summer, must be unsuccessful. A small pond of an acre or two, if fed by springs, or if a living stream, stocked with other fish, runs through it, may support a few Bass, and answer as an amusement. But to raise Bass for profit, we must have a large pond of twenty acres or more, or, in its absence, a stream large enough to furnish water-power for factories. These fish have been quite extensively transplanted in New England during the last twenty-five years, and the conditions of success are pretty well understood. They thrive almost uniformly in large ponds, and lakes at the head of streams, and when these become full of fish, they escape at the lower out-let and stock the streams below clear to tide-water. The fishing not infrequently becomes better in the lower waters of the stream, than at the pond where they were planted, especially if the pond is small, shallow, or muddy. The fish, if left free, will find the breeding grounds, and conditions of life that suit them. They do best in large bodies of water, with rocky or gravelly bottom, and are in no haste to leave such localities. One or two hundred Black Bass put into such a pond or lake, will multiply rapidly, and furnish good hook fishing perpetually after the fourth year. The earliest ponds stocked in Connecticut were, Waramang Lake, in New Preston, Long Lake, at Winsted, Pocatapang, at East Hampton, and the reservoir pond at Bolton. This last pond has stocked the Willimantic, the Shetucket, and Quinebang, below, and Black Bass are frequently taken in the Shad seines near tide-water, at Greenville. Judging from this experience of pisciculturists, it is idle to plant Black Bass in small ponds of an acre or two, near the homestead. The best thing, for one who is fond of the rod and fly, to do, is to unite with his neighbors of similar tastes, and stock the nearest lake or river where there is abundant room for Bass. It should not lessen their pleasure, to know that at the same time they are increasing the food supply of their neighbors.

CONNECTICUT.

IBERIAN IRIS.—(*Iris Iberica.*)—*See "Notes from the Pines," page 222.*

How to Use Driving Belts on Machines.

Now that machinery and farm engines are coming into general use, a few hints as to the best methods of choosing and working belts will be useful. There are good and bad belts, although respectable makers of belts choose the best material and manufacture it in the best manner. A good leather belt, one inch wide, should lift 1,000 lbs.; if it breaks under this strain, it is imperfect. A good belt should last at least three years, if it is protected, as it should be, from moisture. A belt that is made to run on the flesh side, will, with care, outlast four of five belts run exclusively on the hair side, providing the flesh side is stuffed with tanner's dubbing. Soft and pliable belts have three times the adhesiveness, and consequently the power, of hard stiff ones. For dry, warm places, soft, coarse leather will do good service; but for moist or damp places, the finest grained and the firmest leather only, should be used. A thick belt is not always stronger than a thin one, the quality of the leather is the most important factor in the strength of the belt. The best belts are cut from the center of the hide. A belt may be made to run five years by careful use, that would otherwise be ruined in one year. A belt should run free and easy; tight belts are soonest worn out, and they cause the bearings of the shafting to heat and wear very quickly. The lace-holes of belts, are oftener torn out by having the belts too tight, than by weakness of the leather. The lace-holes should be made with an oval punch, the length of the hole being parallel with the length of the belt. The lacing of a belt should begin at the middle, and each side should be drawn up with equal tightness. The ends should be cut exactly square, and the lines of holes parallel with the ends; the crossing of the laces should never be on the pulley side of the belt. No other manner of connecting the ends of the belts is so good as lacing; this is elastic, and runs without noise or jar over the pulleys. The friction of a belt is twice as much on wood as on iron. If the pulleys are covered with leather, the belts may be run much slacker than otherwise, and they will last one-fourth longer. When a belt slips, the inner surface should be sprinkled with a mixture of Spanish white (fine whiting) and rosin, finely powdered. If a belt becomes smeared with oil or grease, it should be coated with fuller's-earth, and the inside scraped with a sharp-edged wooden blade. Soft wood is better for pulleys than hard wood; for round belts pear-wood wheels are the best. Tighteners should only be applied to the slack side of the belt. If pulleys are a long distance apart, it will be better to have a loose pulley placed midway, and use two belts rather than have so much sag in one long belt, as this causes a flapping motion and bears too heavily on the journals. When a journal heats, it may best be cooled by placing an endless belt of flannel as near as possible to the heated part, and causing the lower bight of the belt to run in a vessel of cold water.

Pulleys should always be a little wider than the belt. When a belt runs over one side of a pulley, that side of the pulley is higher than the other, or the belt is shorter on that side. When a belt becomes mouldy from neglect, it should be well rubbed with a dry cloth, and then with pyroligneous acid; this acid will prevent mouldiness on belts that are used in damp places. If the laces are gnawed by rats or mice, they should be soaked in castor oil mixed with an equal quantity of tallow; no vermin will meddle with leather that has been dressed with castor oil. When a belt is found to slip, the slip will be on the larger pulley, and not on the smaller one. No belt should ever run under a tension of over 300 pounds per inch of section. Never attempt to put a belt upon a pulley while it is in motion. All these rules, except where the contrary is obvious, apply equally to rubber belts.

The Irises—The Netted Iris.

Many flowers fail of appreciation because of the ease with which they can be produced, and their abundance. Take some of our common garden Irises, for example; their flowers for variety in color and beauty of texture, are really exquisite, but they are cheap, a large plant can be bought for 25 cents, which will give dozens of blooms, and then being perfectly hardy, it requires no care whatever. Yet examine the individual flowers, and in all that constitutes beauty, they are quite equal to some of the rare plants, such as some Orchids, the plant of which costs $10 to start with, and which must be grown with the greatest care. Then some of the less common Irises, such as the Iberian, and the Netted, may be treated as common greenhouse or window plants, and their beauty enjoyed in advance of their time for blooming in the open air, and give the real lover of plants, often a person of moderate means, an opportunity to enjoy as much of floral beauty as can those whose wealth allows them to command the most costly of Orchids and other rare plants. By no means would we discourage the culture of Orchids and such plants, for we wish that more persons of wealth would engage in it, but we would point out to those with slender purses, that there is within their reach quite as much of intrinsic beauty as the wealthy can command. We were led to these remarks by a pot of the Netted Iris (*Iris reticulata*) sent to us this spring by Woolson & Co., Passaic, N. J., growers of hardy plants, to show us how well it forced in a common cool greenhouse. This species, about which there has been considerable confusion of names, is a native of the Crimea; it belongs to the section with bulbous roots, and has very long, narrow, and pale-green, four-sided leaves. The flowers are solitary, and of the form shown in the engraving, which is about the natural size. The color of the flowers is an indescribably rich blue, relieved by a blotch of golden yellow, the two making a contrast that is most charming; added to this beauty of color we have that of fragrance, which has been compared to that of violets, but seems to us, while equally spring-like, quite peculiar. Messrs. W. & Co. inform us that this Iris is quite hardy with them, but being an exceedingly early bloomer, coming with the crocuses, or a little later, it may be caught by the late frosts. It forces with the greatest ease; if plants are potted in the fall, and kept in a cool cellar, or in a common frame, they may be brought to a sunny window, where they will soon come into bloom, and give pleasure not only by their rich color, but by their charming fragrance.

THE NETTED IRIS.—(*Iris reticulata.*)

Species of Tulip—Greig's Tulip.

No flowers make the garden so gay in spring with brilliant glow as the Tulips, with their crimson, scarlet, orange, yellow, and other positive colors. The dealers make two principal classes, the Dwarf or Early, and the Late or Show Tulips; aside from these they have a small class of Double varieties, which for a mass of brilliant color can hardly be equalled, and the quaint, odd Parrot tulips.

The Early or dwarf varieties, including the popular *Duc Van Thol*, are derived from *Tulipa suaveolens*, of Southern Europe. The Late, Show, or Florists' tulips, have *T. Gesneriana* of Russia for their parent; the Doubles and Parrots are supposed to be crosses of these and other species. Our catalogues occasionally offer a few, not more than half a dozen all told, of distinct species, such as *Tulipa cornuta*, *T. Gesneriana*, the typical form of the Show tulip (both of these, with Parrot tulip, we figured in Oct. 1871), and a few others. Recently, through the discoveries of travelers, especially in Western Asia, the number of tulips has been considerably increased, and there are now some 50 recognized species. Within a few years European cultivators have manifested much interest in the species of tulips, and some of them are of great beauty, of the gorgeous type, while others are equally attractive for the delicacy of both form and color, and these plants are likely to become popular in the spring garden. The most striking of these recent introductions is Greig's Tulip, *Tulipa Greigi*, so named in honor of General Greig, President of the "Imperial Russian Horticultural Union," discovered a few years ago in Turkistan. We received, a few years ago, from the remarkable collection of Herr Max Leichtlin, of Baden Baden, Germany, a bulb of this, which has been exposed for two winters without protection, and fully confirms M. Leichtlin's account of its great hardiness, according to whom, it, when its leaves are half grown, endures a temperature of zero without injury. This specimen allows us to present an engraving, which, as we can not show color as well as form, fails to give the great brilliancy of both flower and foliage. The leaves of this are beautiful in themselves, being of a glaucous green, abundantly and distinctly blotched with rich purplish brown. The flower, which is broadly goblet-shaped, is from four to six inches in diameter; the general color is of the most vivid orange scarlet; at the base of the flower is a broad blotch, as near black as we ever find in flowers, which is bordered by a clearly defined margin of bright yellow. These colors produce a most brilliant effect, and combined with the lasting character of its bloom, will make it much sought after. Such plants are of comparatively slow increase, and it will no doubt be some few years before this tulip will be generally offered by dealers. We are occa-

GREIG'S TULIP.—(*Tulipa Greigi.*)

sionally obliged to inform our readers that we have no plants for sale. New subscribers, not knowing this, often write for plants which we illustrate and describe; we do this, as a matter of horticultural news. In this case, we have one of the very few bulbs of the country. We may say, as to the plants illustrated and described in our pages, if the plant is not in general cultivation, we mention the particular dealer who furnished us with the specimen; if this is not given, it may be assumed that it is to be had generally of the dealers in such articles.

One Grape Vine.

THIRD ARTICLE.

In the previous two articles we have endeavored to show the manner in which a vine grows, and illustrated it by the growth of a newly planted vine, which should always, the first year, be restricted to a single shoot. We here briefly recapitulate these points, as it is important to impress them thoroughly upon the mind of the grower. We have shown that this shoot is but a repetition of the same parts—a length of stem, a swollen place, or node, at which is produced on one side a leaf, and on the other side a tendril—or a cluster of blossoms, followed by fruit. Stem, leaf, tendril (or cluster), in succession. These are all the parts on the little vine of the present season's growth, and all that there is on any vine of the growth of many years. At the axils of the leaves on the main shoot, are produced laterals, or side shoots, but these are but repetitions of the main shoot, a section of stem, a leaf and tendril, and these repeated as long as the vine continues to grow. If the vine is an old one, no matter how old, each shoot that has started this spring, will be found to be exactly like that from the newly planted vine, except at its few (3 or 4) lower nodes, instead of tendrils there will be clusters. An old vine, especially if it has been neglected, appears confusing, but examine it carefully; all that will be found is the wood of former years, which has ripened and become hard, and from this spring new shoots, precisely like those we have described. It is necessary to say a word more

About the Laterals.

When the leaf upon the shoot is well developed, there will be found at the base of its petiole (or leaf-stalk) *two* buds, as shown in figure 3, last month. Only one of these will start and push out a shoot, the lateral. This will be, as already stated, a repetition of the shoot from which it springs; if allowed to grow, it will take away from the nourishment of that shoot, and besides, make a profusion of needless stems and leaves. Many years ago, before the matter was well understood, it was ad-

PINCHING THE LATERALS.

vised to pull out this lateral altogether—a great mistake. If this lateral were allowed to grow, the other bud would remain dormant, and be ready for next year's growth and fruit, but if it were pulled out altogether, then the *other bud* would start, to the great injury of next year's fruiting of the vine. Here was a necessity for a compromise, the growing lateral must be kept within bounds, and yet not so much checked as to cause the other bud to start. This, as briefly stated last month, is accomplished by pinching. As soon as the lateral has made two or three leaves, pinch out all but the *lower one;* a bud from the axil of this lower leaf will soon start, and when this has two or three leaves, again pinch out all but the lower one; if there is another start—there will be rarely more than three—pinch again. The engraving, from Fuller's excellent "Grape Culturist" (which every grape grower should have), shows this clearly. At *f* is the lateral, which has been pinched once at *a;* this has made a second start, and now needs to be pinched at *b*, and so on. We say "pinched," because at the proper time for the work, the shoots are all succulent, and the work can be done with the thumb and finger, and much more rapidly than would be supposed from the description. This is to be done on the newly planted vine in order to get as strong a main shoot as possible; it is done on the old vine to control the growth, and secure strong buds for next year's fruiting. In directing the setting of the vine in April, a stake about 6 feet high was advised; the vine, as it grows, is to be kept tied to this, but not too tightly, and when it reaches the top, let it sway about at will. A vine thus supported has no need of tendrils, and they may be pinched off when quite young and tender; in a short time they become tough and *wiry*; this is not important, but it saves the trouble of cutting them away at the fall pruning. The insects that will attack the young vine now, are usually large beetles and caterpillars, which should be sought for and hand-picked, as it is desirable to have every leaf whole and healthy. Examine the underside of the leaves frequently, and if, especially in a hot, moist time, slight grayish patches are found here, or on the young shoot, it is mildew, and must be checked by a free dusting of sulphur, blown from a bellows.

Notes from the Pines.

A friend kindly reminds me that "The Pines" have not been heard from thus far this year. Had I undertaken a monthly series, I should apologize, but I may as well say, for his benefit and that of our many new readers, that these notes are given when it is more convenient, and more economical of space, to condense a number of matters by writing in the first person than it is to make separate articles under the editorial "we." After the unusual winter—really for once, at the East, at least, the winter *has been* unusual—I expected to find more or less damage had been done. When a winter is so very mild as the last was, plants are not fairly dormant; they are in an excitable state, and when a cold snap does come (and we had several last winter *comparatively* cold), injury is likely to result. This spring has shown but little damage of this sort, but that was where I should least expect it,

Among the Blackberries.

The "Dorchester" badly killed; "Wilson's Early" less so, while "Kittatinny," always the hardiest, is here and there killed back for some distance. On the first, scarcely a cane is alive. The Raspberries, too, seem to be somewhat injured. But as I have made a new raspberry plantation to replace the old one, the loss is of little consequence. I have a number of peach-trees that are of southern origin, and these varieties are rarely, on this account, even tried so far north as this, yet every one of them escaped harm, and came out in full bloom....I think that I mentioned last spring, that, after many vain trials with seeds that would not grow, I started

A Bed of Sea Kale,

by importing the roots, and was at last able to enjoy a vegetable so popular in England. When looking after it early this spring, I found that, in the hurry of fall work, the covering of manure to the bed had been omitted, and worse than that, the plants had been originally set so near the surface that the crowns had been injured and were decaying. This was a sad disappointment, but I had the roots dug up—enormous roots they were; the decay was confined to the crowns, and all sound below. These roots were cut into four-inch pieces and put into the sand of a propagating bench. It was surprising to see how freely they formed buds and roots, and there was soon Sea Kale enough to make a large plantation. On the whole, I do not regret the mishap, as no doubt I should have been unwilling to sacrifice this spring's crop from a few stools, in order to propagate a larger quantity of a plant that is very acceptable in early spring, before asparagus comes, and which may be had very early by a little forcing, by covering the beds with hot manure. There are many who regard

The Wild Dandelion,

as gathered from the meadows and road-sides, as the most acceptable of spring "greens." It has a rather pronounced bitterness, which, to some, suggests medicinal qualities, and it is eaten by them with a notion that it is "healthy," which I have no doubt the Dandelion generally is, but whether it is *healthful* or not, I never cared to inquire. Having, like Japhet (or was it Jacob?), studied the "rudimans" over a mortar and pestle, I have always preferred my food and medicine on different dishes, and have sternly insisted that tomatoes were not, as alleged, medicinal, for if they were, I would not eat them.—But this is a digression.—To all who like dandelions, let me advise them to cultivate them. Sow "Vilmorin's Improved" at once, and give them about 18 inches apart each way, or in two-foot rows, a foot apart in the row. Next spring there will be dandelions, each one of which will be as large as half a dozen wild ones, and a "mess" can be cut in five minutes that it would take a boy—allowing for a boy's digressions—half a day to hunt up here and there. Then as to quality there is no comparison; grown in a manured soil, and not having to struggle with the grass, they are vastly more tender, while the often too distinct bitterness of the wild plant is subdued to a remarkable degree, and is really acceptable — though I trust not "healthy." Several years ago you illustrated the

"Common Moss Pink,"

Phlox subulata, which, in its ordinary pink form, is one of the plants met with in old gardens, but like many other good old things, is now less frequently planted than its merits warrant. The white variety (in European catalogues, under the incorrect name *Phlox nivea*, and also *P. Nelsoni*) is more rare, and more striking. Getting a bit of it some years ago, we went on dividing it from year to year, thinking so good a thing would be wanted for exchanges, and found last year that we had a large lot on hand. Not wishing to throw so good a thing away, it was put—of all places—in the vegetable garden, a row 200 feet long. This spring it had formed a bed some three feet wide, and of the above named length, and it was "a sight to behold." Seen from a little distance in the sun, it out-dazzled a snow-bank for brilliant whiteness, while by one standing close to it, could not see a leaf for the continuous sheet of flowers. Let those interested in cemetery planting make a note of the *White* Moss Pink.... Several years ago I had one of the first plants of

Iberian Iris, *Iris Iberica*,

that were brought to this country; when it bloomed I had a drawing of it made for "Hearth and Home," judging from my single plant, I thought that the European illustrations of the same were needlessly exaggerated. The flower, as it was, seemed to me fine enough and large enough, without going beyond nature. The original plant has now grown into a large, well-established clump, and its flowers this spring out-do in size any of the European cuts that I thought so much beyond the truth. If you still have that engraving, I wish you would publish it [see page 220.—ED.], that it may make this strangely beautiful, and perfectly hardy, plant better known. It is no exaggeration to say that some of the flowers are twice as large as that from which the engraving was taken, which shows that hardy plants are only seen at their best when thoroughly established. The upper, erect, divisions of the flower are nearly pure white, with occasional veins, while the lower ones are thickly lined with a peculiar purplish-brown, and each with a large purple spot, so dark that it is well-nigh black. Then the whole flower

has a peculiar crape-like texture that is most pleasing. The low stature of the foliage, not over 6 inches, with the enormous size of the flower, make it an admirable plant, whether for the early spring border, or for forcing.....Was there ever such

A Show of Fruit Blossoms

as now? Whatever may have happened to the peach trees just south of us, about here—12 miles from New York—the country is all a gay garden. Old orchards, fit only for fire-wood and breeding-grounds for the Tent-caterpillar, are "things of beauty and a joy for"—a week. Apples, pears, plums, cherries, and the few peaches, all, like Sophy Squeer's sensibilities, are in "full blow." The abundant blooming is not confined to fruit-trees, but the ornamental flowering shrubs appear to participate in the profuse inflorescence. The only exception to this, so far as I have noticed, is the Forsythias—sometimes called "Golden-bell," usually one of the most free as well as one of our earliest spring shrubs; this made the poorest show I can recollect. For an early shrub, of rather low growth,

Thunberg's Spiræa, *Spiræa Thunbergii*,

is to be especially commended; it grows 3 or 4 feet high, and has a most graceful form; its flowers are like very minute roses, of the purest white; these are produced in clusters of three, all over the bush, and make each slender, curving branch a garland of itself. When out of flower, the foliage is pleasing, the leaves being small and of a light green. It flowers in April, and earlier than any other Spiræa with which I am acquainted. All these qualities combine to make this Spiræa one of the best.... What a pity that the bloom of the

Double-Flowering Fruit Trees,

such as the double peaches, cherries, etc., is of such short duration. They are of great beauty while they last, but one does not care to give room, for a whole year, to a tree that gives returns for only a week, or less. I have a scarlet, double peach, the finest thing of the kind I have seen, that makes a grand show for a few days, but it already takes up too much room.

The Fruiting of Wistaria.

I notice that an English journal quotes our friend Thomas Meehan, of the "Gardeners' Monthly," as authority for the statement that the Chinese Wistaria fruits only when trained as a pillar, and that when allowed to ramble at will, this vine is always barren. This is such a strange statement, that I think Mr. Meehan must have been misquoted. In recalling the fruiting Wistarias that I have known, I find that they have been among the most neglected. I pass one almost daily, which rambles over a veranda, and up to a roof, which probably never felt the touch of a knife, much less was trained to a pillar, or to anything else, yet it hung so full of pods that I called the attention of a seed-dealer to it, and he obtained the stock.

GARDEN THIEVES.—No kind of robbery is more annoying than that of plants and fruit. In most parts of this country, the taking of flowers and fruit is not looked upon as actual robbery, and unless there is a special law, as there is in some States, the depredator can only be prosecuted for "trespass," and the prosecutor has to establish the fact that a certain amount of damage in money, has been sustained. One may have a flower which is to him of a value that can not be expressed in money, or his tree may for the first time bear a single pear, worth to the owner more than a bushel of similar fruit in the market, yet the matter-of-fact judge, will charge the matter-of-fact jury to find damages to the market value of the articles "trespassed" upon. In a recent suit in England, two scamps, who had stolen Snowdrops and other bulbs from a garden, were sentenced to *seven years* of penal servitude each. A most sensible judge was on the bench, who, finding that the thieves had before served three and eighteen months for similar offences, and were not cured, concluded that it was of no use to be lenient with them, but gave them seven years each! "Most worthy judge!"

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Combinations of Flavors.

A friend who has availed herself of unusual facilities for studying French cookery, has given me some of the results of her inquiries and experiments. In Professor Blot's book we were told to use a "sprig" of this and a "pinch" of that, with an indefiniteness quite puzzling to the inexperienced. I have seen recipes for flavoring, which were poor guides for beginners, or indeed for most housekeepers, because the proportions were all given in ounces and fractions of an ounce. One wishing to follow them, and having no scales, might possibly buy the exact quantities separately and mix them afterwards. But my friend has it all reduced to teaspoonfuls and tablespoonfuls, of the medium size, and made just *level* full. She says her preparations are those recommended by the most celebrated French cooks, only they give them by weight, and she has made them easier for our use by reducing them to level spoonfuls. A larger or smaller amount may be made at one time by doubling or halving the proportions. Perhaps it is best to begin with a small quantity.

The *American Agriculturist* gave, a while ago, directions for drying and preserving various sweet herbs, as powders, kept covered in bottles or cans. Powdered herbs and ground spices are those used in these flavoring combinations, and after mixing, they should be kept from the air in the same manner. They are used in soups, stews, hashes, etc.

Flavoring Mixture for Soups.

Four tablespoonfuls each of Parsley, Sweet Marjoram, Winter Savory, Lemon Thyme, Sweet Basil; all dried and rubbed to a coarse powder; also one tablespoonful each of Thyme, and Bay Leaf; one teaspoonful, each, of Marjoram and Rosemary.

Flavoring for Meat Hash and Force-meat.

One tablespoonful each of Black Pepper, Cayenne Pepper; two tablespoonfuls each of Cloves, and of Nutmeg. Keep this mixture dry and closed from the air. In using it, take about the proportion of one part of this flavoring mixture to four parts of Salt—a tablespoonful of the spiced salt for each pound of chopped meat.

Keeping Meat in Hot Weather.

Great is the convenience of a good refrigerator! But many of us, who live in the country, have to get along without such a convenience. Farmers' families, who often depend upon the butcher's meat-cart for supplies of fresh meat, are annoyed by the bother and the waste that comes of getting more beef or mutton on hand than they can conveniently use up before it becomes tainted. The most foolish waste, is to eat more of it than you need, with the idea of "saving it;" the doctor's bill that may result from over-loading the digestive organs is not so good a show of economy, as the fresh eggs you might coax from the hens by feeding them any excess of meat. The meat should first be wiped clean and dry. Some sprinkle it well in all parts with salt. Others use black pepper plentifully (washing and wiping it well before using it to remove the pepper or salt), and then hang it in the coolest place possible—some in the well, others in a cellar. Perhaps the best precaution is to wrap it in a dry cloth, and cover it with charcoal-dust. Some say that wood ashes will answer about as well as charcoal, but I only know the virtues of charcoal by experience. I have found that charcoal will even remove a slight degree of taint. I am told that mutton is improved, as well as preserved, for a short time, by wrapping it in a cloth wet with vinegar, and laying it on the bottom of a dry cellar. All kinds of meat, including fish and fowl, may be preserved in brine for a longer or shorter time.

Drawing Lessons at Home.

A lady in Washington Territory writes me, asking some advice about teaching her children to draw. She says they live in the midst of beautiful scenery, and they want to hang pictures of it somewhere besides on "Memory's walls." Prof. Huxley thinks that every child who is to be good for anything in art or science, or in anything, except the merest drudgery, ought to learn to draw; not to make fine pictures, perhaps, but to be able to *sketch* with some degree of exactness and quickness. He says that this requires no especial talent, for anybody who can learn to write can learn to draw. I think he is right. I think, too, that a knowledge of drawing adds much to one's happiness through life, even if the art is seldom practised, in enabling us better to appreciate the beauties of Nature in all her forms. But I must be practical. The Kindergarten method is, to practise straight lines for a considerable time, beginning with half-inch lines, and making them gradually longer, first vertical lines, then horizontal, then oblique. This is intended for young children between three and seven years of age. It is good practice at any age, but I should never confine a child to it if it is found to be dull or tiresome. All careful practice with pen or pencil helps toward drawing. Train the fingers to careful copying, and the eye to exact measurements and comparisons. But if a child wants to make pictures, let it begin at once to copy them. It is well to use the common drawing-cards if one can get them conveniently, but any simple, well-printed pictures will do. There are plenty of them in the Little Readers, and other school books; and in such papers as the *American Agriculturist*, the cuts are very clear and beautiful. But little should be attempted at first—just a dog's head, or a small bird, or a tree. Only one pencil is necessary at first, and of course the best is the best, but use whatever you can get, if Faber's drawing pencils are not within reach. The best number for a single pencil is Faber's 3. If the scenery is so charming that the children want to attempt copying it at once, let them try. They will probably see too much, or too great a diversity of detail, covering too large a picture. Teach them to cut out little pictures from the large landscape before them—a single rock with the weeds growing about it, or a solitary tree, or clump of trees. If they try this before they have copied considerable, they should often examine good engravings to see how the strong points are brought out, how different kinds of foliage are reproduced, and to learn what there is unsatisfactory in their own attempts.

An Improvement in Family Circulars.

A year or two ago I described the latest and best invention then known, for promoting sociability among scattered members of a family—the family circular, regular in its rounds, and without apparent beginning or end. One member sends it to another, and that one to the next in order, this one to the next, and so on. As it goes around in regular order, each one adds a fresh letter of his own, and taking out the letter of the one to whom he sends the budget; so that no one gets his own letters back again, but each one gets fresh news from all of the others at each round. In the Yankee family where this idea originated, they now have a new wrinkle. It is this: Each one is supplied with the same kind of paper, having a margin next to the fold; this margin is left blank. Then the letters taken out are preserved and bound in volumes to be handed down in the family. As Thomas always sends the budget to Richard, and Richard to Henry, of course Thomas keeps all of Richard's letters, and Richard keeps Henry's. This was proposed for adoption in our family, but one member protests that her letters are so flat, stale, and unprofitable, that she does not want them preserved. I fancy that the bright-eyed boy, whose baby antics are so lovingly chronicled in those letters, might, some years hence, differ with her opinion of the letters which drop out into my desk month after month. When I was in my teens, I spent many afternoons in my father's garret, rummaging an old barrel of family letters, written half a century before, which seemed to me the most interesting reading I could find. A member of our "family circle" sends me in the last circular the following recipe.

Scalloped Veal.

The rule is the same as for scalloped oysters, and

may be used for cooking any kind of cold meat, and when crackers can not conveniently be had, a good dish may be made of it, by substituting bread crumbs for cracker crumbs. Put a layer of Cracker Crumbs in the bottom of a pudding dish. Wet this with Milk. Cover with a layer of finely chopped Roast Veal. Season the Meat with Salt and Pepper (and other flavoring if you choose), and scatter bits of Butter over it. Then put a layer of Cracker Crumbs wet with Milk, another of Seasoned Meat, and so on alternately, finishing with a layer of Crackers, mixed with a Beaten Egg. Cover, and place it in the oven for about half an hour. Then remove the cover, and allow it to bake a nice brown. This recipe is highly recommended as an excellent way for warming over almost any kind of cold meat.

A sister, who makes doughnuts (I never do), offers me the following recipe for

Raised Doughnuts.

One pint of New Milk, four teaspoonfuls of Sugar, one half cup of Yeast, and a little Salt. Stir thick with Flour, and let it rise over night. In the morning add as little Flour as will make the dough thick enough to roll out about an inch thick. Cut in squares of an inch and a half. As you drop them into the hot fat, stretch them out longer, and fry them thoroughly. They are (said to be) excellent with coffee for breakfast. Lard and suet, in equal proportions, *boiling hot*, is is said to be better for frying cakes than either alone.

Ginger-Snaps.

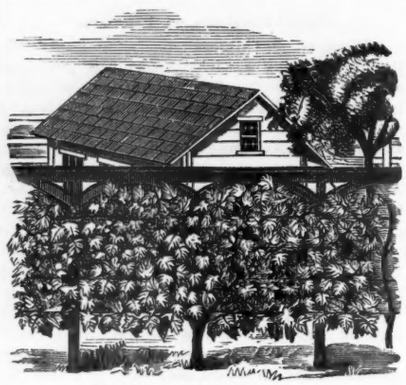
Boil together one pint of Molasses (Sorghum is excellent for this), one teacup of Shortening (some consider Beef Suet the "snappiest"), a pinch of Salt, a tablespoonful of Ginger. Let it *really boil* for about two minutes, then set aside to cool. When cool, add two level teaspoonfuls of Soda, and beat all together thoroughly. Add Flour to make a dough as soft as you can roll out very thin. Cut into shapes, and bake in an oven not too hot, as they scorch very easily.

Care of Children's Feet.

I sympathize much with country-bred children in their scorn of the notions of city-bred children about going bare-foot in warm summer weather. "It will make the feet grow large!" Thus the little feet, that ought to grow in proportion as the rest of the body grows, are kept in shoes that fit as snugly as possible, hence when the body reaches maturity it is really deformed, because the little feet dressed in "number two," are not proportioned to the figure of medium hight and weight. The Chinese plan is the same, only more so. The use of tight corsets is on the same principle of false art. So is the flat-board used by the "Flat-head" Indians to "improve" the natural shape of the head. I am making no plea now for undressed feet, but I would protest against tight shoes for anybody—least of all for growing children. I know of children who have corns on their feet in consequence of this abuse. Children should not wear shoes that hurt them. A little girl, who turns in her toes when walking, acquired the habit by wearing, when three years old, a shoe that so hurt her that she could only walk easily by turning in her toes. Corns on the bottom of the feet are often caused by shoes with obtruding pegs, or hard bunches in the thread or leather, which press into the sole of the foot.

A Screen at the House.

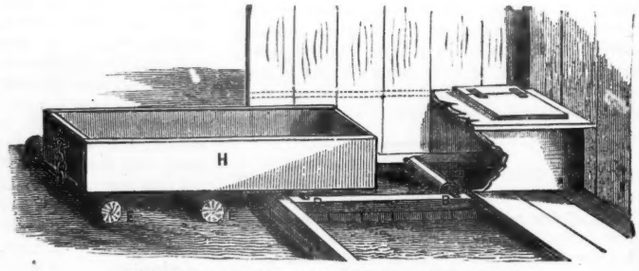
It is especially the case in sparsely settled portions of the country, that the house is placed quite near the public road. This is done to avoid a sense of loneliness, and to allow the inmates a glimpse of the few passers by, that they may not feel quite isolated. It generally happens that this advantage, as it is regarded, is offset by the exposure of the rear of the house, the back-door, and the back-door yard, to the gaze of all who pass, and it becomes desirable to shut off this view of the premises by a screen, which is necessary also, to allow the inmates to pass to the dairy-house, wood-shed, or other out-buildings, unobserved. Houses, where it can be afforded, are often provided with screens of lattice-work, of two-inch slats, crossing one another, with a bottom board below, and cornice above, which are invariably painted white, while the lattice itself is green. Such a screen, while well enough in a village, is quite too artificial and conspicuous for a country home. The best screen for the country, whether for shutting out the view, or for the shelter it affords, is a living one of evergreen trees. This, however, can not be had at once—time is required to produce it, and while this is growing some other may be supplied. Mr. L. D. Snook, of Yates Co., N. Y., sends us a design for a screen, which may be used as a permanent one, or to serve until one of evergreens has reached high enough to take its place. This, shown in the engraving, has posts, 7 or 8 feet high, which are connected by a cap-piece of boards, cut as there shown, and strands of galvanized iron wire (No. 12 or 14), are passed from post to post, every 12 or 18 inches, according to the kind of plant to be used. One of the best plants for such a screen is a rampant growing grape-vine, such as the "Clinton," or "Taylor," and until this gets established, some annuals, such as Morning-glories, or such quick-growing plants as the Maderia-vine may be used.



SCREEN FOR A BACK YARD.

A Warning to Every Housekeeper—

Including husband as well as wife—is the account published last month (page 169) of the deaths, at Newport, R. I., of six persons in a family of eight, all occurring in rapid succession. The important portion of this account, is the almost absolute tracing of this mortality to its cause — utter and shocking neglect to remove the wastes of the bodies of those eight persons. Here, in the famed city of Newport —the resort of wealthy pleasure seekers, and the permanent residence of a community widely known for its intelligence and refinement—was a state of affairs which could not be found in the poorest "huddle" of holes and huts, that answers for houses to the lowest of all our tribes of savages, the Digger Indians. This condition was not due to poverty, but, let us hope, to ignorance rather than indifference. There are some subjects that we would prefer not to write upon, but when, as in this case, it is one not only involving health, but life, we feel it a duty to our readers, to call things by their plain names, and to ask them to put aside all squeamishness, while we beg them to look to the condition of their closets and privy-vaults. There are occasional exceptions, but we know that, take the country through, outside of villages and cities, where there is public provision for carrying off fœcal matters, this is the one weak point in our domestic arrangements, and a disgrace to our civilization. Several years ago we made a carriage journey of several days, with a party of well known pomologists, through one of the most noted fruit-growing districts in the country. A region not only famed for the variety and excellence of its fruits, and the beauty of its rural scenery, but also for the refinement and hospitality of its people. Everything conspired to make the visit in all respects most charming—save one. A large share of our enjoyment was neutralized by the horrid condition of the outbuildings—a few at private places were bad enough, but those at the three or four hotels where we were guests, were of a kind and in a condition which need not be described. Were some enemy to human health, comfort, and decency, to offer a prize for the very worst affair of this kind that human ingenuity could devise, we are quite sure that one of these hotels would win it, though the competition among themselves would be close. We do not mention this fruit-growing district as exceptionally bad, but as an instance of a neglect of sanitary matters in a community where we should least expect to find it. If such can occur in the very oldest settlements of generally well-to-do people, we may expect newer localities, where men are struggling to make a home, to be even worse. Diphtheria, as in the Newport case, is a disease less frequently traced to such causes than Typhoid, and other low forms of fever, Scarlet-fever, etc. That *any* disease can originate from neglect of the out-building, should alarm the whole community. We frequently read in the papers, that "the funeral was attended by the most substantial and influential citizens from miles around," and that "the sermon was most impressive, and well calculated to comfort the afflicted family," but these, and similar obituary notices, are often quite incomplete for the lack of the statement—"the privy-vault and sink-drain remain as heretofore." It is probable that there would be less of this neglect, were it not that the subject is commonly regarded as *taboo*—one not to be mentioned. "Water-closet" is tolerated, but "privy" shocks many very nice people, who will hear absolute profanity without protest. In this case we do not mean "water-closets," but *privies*, and we say that, take them throughout the country, from top to bottom, shore to shore, they are a disgrace to a people called "civilized," not only in the matter of decency and comfort, but in the vastly more important one of health; and when we hear of certain deaths as "mysterious dispensations of Providence," we feel that it would be much more to the point to call them "God's protest againt the violation of His natural laws"—laws which many brutes observe more closely than do many men. The existence of this danger is absolutely inexcusable, as it can be avoided, almost without trouble and without cost. Now, before weather becomes settled at mid-summer heat, every common privy should be substituted by, or converted into, an 'Earth-Closet.'



CHANGING A COMMON VAULT TO AN EARTH-CLOSET.

Dry Earth, not Sand,

but good loamy soil, the stiffer the better, and perfectly dry, is all that is needed to destroy every offensive odor, and every unhealthful emanation. Earth-Closets, or "Commodes," are very convenient, and are commended to those who can afford them. They may be placed in any out-building, in any vacant closet or other room in the house, and for invalids and delicate persons, are the greatest imaginable comfort. But to secure all the benefits of dry earth, these are not necessary. An Earth-

Closet consists of a receptacle to hold the deposit, a place to hold dry earth, and a mechanical contrivance that, by pulling a handle, will allow a portion of dry earth to fall upon and cover the deposit. Now a soap box will answer to hold the deposit, another soap box will hold the dry earth, and a scoop (an empty fruit-can, if nothing better), will answer in place of the machinery for dropping the earth. These articles, if bought, need not cost 25 cents; but they, or something that will serve, may be picked up on almost any farm. Having these, if one can not arrange them with reference to a seat, in a convenient manner, he must be quite lacking in tact. This outfit will be quite as efficacious as the most costly "Commode" ever made, in every respect, save one—some persons will be so indifferent, lazy, or obstinate, that they will neglect to apply the earth. This is a matter which must be *insisted upon*. A contrivance of this kind may be put in a place partitioned off in the wood-shed or other building, and one should also be made at the barn for the farm hands. If the receptacle is small, it should be made the business of some one to empty it daily, throwing the contents upon the manure heap. Several inquire whether the "night-soil" is not thus injured for use as manure. Not perceptibly, if placed upon the manure heap; it is only when it has been kept mixed with dry earth for a long time, and in a dry place, that it is dissipated. But this is of not the least consequence. The value of the night-soil, of a whole family for all time, is not to be offset against a single fit of sickness, to say nothing of a death. Many will find it convenient to convert their present out-building into an earth-closet, and as a hint to this end we give the engraving preceding, from a drawing by our correspondent, Mr. L. D. Snook, Yates Co., N. Y. The old vault is to be first filled up, and the building may stand in its original location, or elsewhere, as may be most convenient. As, when properly managed, no odor whatever is given off, the structure may be placed as near the house as desirable. In the engraving a portion of the house is removed to show the arrangement of the interior. A strongly made box is provided, of such a size as will pass easily under the seats. Two joists are laid down to support wooden rollers, with iron pins for journals, upon which the box may run, and if large, the box should have ring-bolts, to allow a horse to be hitched to it when carried away to be emptied, in which case it is well to provide it with runners. If not too heavy, it may be moved by two men, with the aid of loose rollers. The engraving sufficiently explains itself.

Gathering the Dry Earth.

In a dry spell, scrape up the dry surface earth, from the garden or plowed field, or use road dust if not sandy. By capillary attraction the surface earth is never completely dry. Harrow a space thoroughly, and throw the dry surface earth upon a platform of boards laid down for the purpose. The hot sun will soon make it completely dry; cart it in before night-fall, or if it must be left over night, cover it from the dew with boards or other material. Store in a dry place. It is well to collect enough to last a year, and pass it through a screen to remove stones and lumps. One more point to be remembered. Coal ashes are quite as efficient an absorbent as dry earth, and may be conveniently used, especially in winter. Finally, let the master of the house (or the mistress) insist upon two things—that the scoop and dry earth *shall be used*, and that *no slops* of any kind shall be poured into the receptable. Chamber slops are of sufficient value for it to pay to carry them daily to the manure heap.

Household Recipes.

The following come from housekeepers of experience and judgment, who have thoroughly tested and approve them.

"Boston" Brown Bread.—One pint each of Indian and Rye Meal; ½ cup of Molasses; 1½ pint Milk or Water; 1 teaspoonful Soda; 1 teaspoonful Salt. Steam three hours, and then place in the oven and bake until well browned.

Gipsy Pudding.—Cut stale sponge-cake into thin slices, spread them with currant jelly or preserves, put two pieces together like sandwiches. Fill a dish with these; make a soft custard, pour over the cake while hot, and let cool before serving.

Pop-Overs.—1 pt. Flour; 1 pt. Milk; 2 Eggs. Eggs beaten to a froth, mix quickly, and bake in hot buttered cups. Serve with hot sauce.

Coffee Cake.—One cup very strong Coffee; 1 cup Butter; 2 cups brown Sugar; 3 Eggs; 1½ pint Flour; 1½ teaspoonful "Royal Baking Powder," (or ½ teaspoonful of Soda, and 1 do. of C. Tartar); 1 cup stoned Raisins; ½ cup chopped Citron; 1 teaspoonful of Nutmeg, and one of Alspice; ½ cup of sweet Milk. This will make two good-sized loaves.

Citron Cake.—1½ cup Butter; 2 cups Sugar; 6 Eggs; 1 teaspoonful "Royal Baking Powder," (or ½ teaspoonful of Soda, and ½ do. Cream of Tartar); 1 pint Flour: 1 cup Citron, cut in thin slices. Rub the butter and sugar to a smooth cream, add the eggs two at a time, beating 5 minutes between each addition. Sift the flour and baking powder, add it to the butter and sugar, with the citron.

Crullers.—1 quart Flour; ½ cup Lard and Butter in equal parts; 1 cup Sugar; 1½ teaspoonful of "Baking Powder" (or Soda ½ teaspoonful, Cream Tartar 1 teaspoonful); ½ pint Milk; 2 Eggs. Flavor with Nutmeg. Sift flour, sugar, and powder together, rub in the lard and butter, and add the beaten eggs and milk. Mix to a dough and fry.

Washington Cake—St. Louis, 1780.—2 cups of Butter; 3 cups Sugar; 4 cups Flour; 2 teaspoonfuls of "Royal Baking Powder"; 5 Eggs; 1 cup Milk; 1 cup Stoned Raisins; ½ cup Currants; ½ cup chopped Citron. Flavor with Nutmeg and Cinnamon, one teaspoonful each.

Sponge-Cake.—6 Eggs; 3 cups powdered Sugar; 4 cups sifted Flour; 1 teaspoonful Soda; 2 of C. Tartar; 1 cup cold Water, a pinch of Salt.

BOYS & GIRLS' COLUMNS.

The Young Microscopist's Club.

Now that you have learned to notice little matters, you will see many things that you have passed by without even a thought. On the leaves of various trees, and other plants, you will often find swellings, and sometimes they will be "broken out" as if they had a bad skin-disease. While some of these are mere irregular swellings, others are singularly regular and some quite beautiful. These are really *galls*, as those swellings on plants, caused by an insect within them, are called. The "Oak-Apples," which almost every youngster knows, are very large galls, caused by various little gall-flies.

These Leaf-Galls

are sometimes produced by a small mite, sometimes a plant louse, or one of the two-winged or four-winged flies. The way leaf and other galls are produced is this: The fly, or mite, lays an egg in the substance of the leaf, bud, stem, or wherever it may be, and the part soon swells up, just as your finger will swell and become sore if you do not remove a splinter that has entered the flesh. The egg hatches, the little grub or larva grows, and feeds upon this nest that the swelling makes for it; in time the creature makes its growth, and comes out in its perfect state, like the parent that laid the egg. You will find

Fig. 1.—"NAIL-GALLS" ON LEAF.

On the Grape-Vine,

almost anywhere, one or more kinds of leaf-galls. What is very curious, the galls produced by the eggs of different insects, mites, etc., will cause the leaf to form—on the very same plant, galls quite unlike in appearance; indeed you might tell them apart by feeling them only. Figure 1 shows a bit of a grape-vine leaf, with what are called "Nail Galls." One of these is shown cut open, with the larva inside, in figure 2; this, when ready, would come out a little gnat-like fly. In figure 3 is a bit of another grape-leaf, with pretty scolloped galls, the

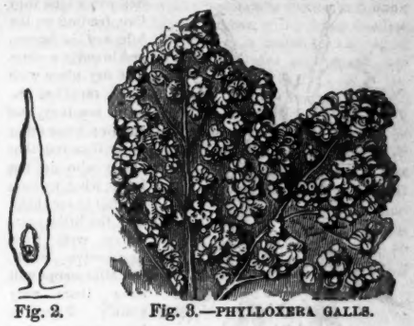


Fig. 2. Fig. 3.—PHYLLOXERA GALLS.

work of a louse, that minute, but very destructive creature which you must have read of,

The Dreaded Phylloxera,

which has quite ruined some of the vineyards of Europe. There are two "types," or styles, of this louse, one of which—the most injurious—attacks the roots of the vine, and this one which attacks only the leaves. I have been asked to say something about

"The" Hen Louse.

Unfortunately for the fowls, I can't describe "*the*" Hen Louse, for there are so many of them—half a dozen or more. Here is a portrait, figure 4, of one of the easiest to find, as it is one of the largest, being nearly a line or $^1/_{12}$-inch long. Unless special care is taken, little chicks, when they are first hatched, are sadly afflicted; and the feathers on the head are all alive with them. It is well to remember that lard or oil will kill them. Not only common fowls, but all other domestic birds, including the delicate pets, such as the canary, and the wild birds from the largest to the smallest, are infested by *parasites*—as animals and plants that live upon other animals and plants are called. When any unusual birds are shot, it is well to examine them for these. Lice are true insects, but mites are also found on birds.

Fig. 4.—HEN-LOUSE.

If you have house-plants in a warm dry room, the leaves of such plants as Camellias may become brownish, and the leaves of more delicate plants may appear blotched, and begin to drop. And after searching for the cause, if you take some leaves and go to an experienced gardener, he will very likely say, after a glance at the leaves,

"Pooh, Red-Spider, My Young Friend."

You go home and look for spiders, and find none. In hot summer days, when it is dry as well as hot, the leaves of the pear-tree, so bright and fresh but awhile ago, become brownish and look in a bad way, and some one who knows about trees is asked to tell what is the matter. He will very likely say, "Ah, Red-Spider—you have it bad."—You look all around and find no "Red," or any other spiders. You will be told that the Lindens and some other shade trees, have "The Red-Spider." If you are much among gardeners you will learn from their talk that this "Red-Spider" is an important fellow, and wonder why, with all the mischief that is charged upon it, you do not find this remarkable "Red-Spider." There are several reasons, the principal being that

It is Not Usually "Red," and is Not a "Spider,"

these joined to the fact that it is so very small as to be barely visible, are good reasons why you failed to find it. So much is said of it by gardeners that persons who do not know it, expect to see some large creature. It is not a proper spider. The spiders have their abdomen, or belly portion, joined to the body proper by a narrow portion (like a *waist*), but this insect is in one piece; hence is classed as a *mite*, and belongs to the spinning mites, as it makes a web finer than that of any spider. Then they are of different colors on different plants, and at different ages, and are greenish, brown, rust-colored, and sometimes bright red; for this reason the name is misleading. When full-grown, this mite is about half a line (or $^1/_{24}$ of an inch) long, but they are usually much

Fig. 5.—RED SPIDER—YOUNG.

smaller. They are found mostly on the under sides of the leaves, where they spin a web of wonderful fineness, beneath which they live, feeding on the juices of the leaves, and breed in a warm and dry place with great rapidity. So small are they, and so often some other color than red, that those who do not know what to look for, fail to see them, and the little pests go on with their destructive work. Our Microscope will show them very plainly. Figure 5 is a young and imperfect male Red Spider, with only six legs; figure 6 gives the perfect and full-grown male, with eight legs, and two very strong projections, or jaws, at the head. The perfect female is about the shape of figure 5, but has eight very hairy legs.

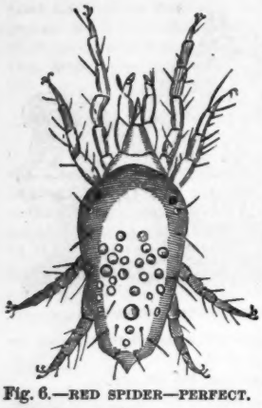


Fig. 6.—RED SPIDER—PERFECT.

How to Kill the Red-Spider.

It does not like water, and in greenhouses where the air can be kept moist, and the leaves often showered, it does not make much headway, but in a dry and hot room the leaves must be lightly sprinkled with sulphur.

Using the Diaphragm.

You will remember that we advised not to use the Diaphragm ordinary—that is, the little plate with a hole in it—but to turn it outside the glasses. But when you wish to examine a small point only, as an insect's foot, turn in the diaphragm, adjust the focal distance of the lenses from the object carefully, and then, with a proper light, it will bring out very small things wonderfully plain—even things you would not notice in looking through the glasses ordinarily....Among the many insect objects none have more general interest than the

Foot of the Common House Fly,

which is shown in figure 7, rather larger than you will be able to see it with our Microscope, although you can make out the parts very clearly with that. Besides a pair of strong claws, the foot has two broad plates, which are thickly covered with minute hairs. It is well known that the fly can walk upon smooth glass, and can also walk on the ceiling with its body down; it has been stated that its feet are provided with something that acts like a boy's sucker, that allows it to hold itself in these positions, but it is now found that these little hairs on the feet give out

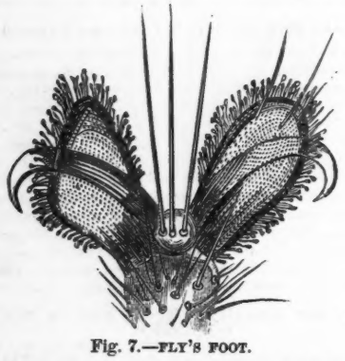


Fig. 7.—FLY'S FOOT.

a sticky matter, and that this mainly, if not wholly, enables it to walk on smooth surfaces and upside down.

The Mouth Parts of the Honey Bee

form another interesting object, but it will require some care to lay it out properly. It is generally supposed that the bee draws up its honey from flowers by means of a sucker, such as the moths and butterflies have; but this is not the case, they have no proboscis proper, but a kind of very long tongue, and they take up the juices by lapping. In figure 8 the long dark portion in the center (*A*) is the "tongue" (as it is generally called, though it is really a long lip). This is not a tube, but solid and closely covered with short hairs, and can be extended to considerable length. Each side of this is a lip (*d*), the two forming a case for the "tongue;" outside of these are two long jaws (*c*), and outside of these two shorter jaws (*b*). When not in use, these parts can be contracted, and drawn in and occupy but little space.

The Eyes of Many Insects

are exceedingly beautiful, especially those related to the bees and flies. Not having a bee or any such insect at hand, I have borrowed a picture of a bee's eyes (fig. 9) to show you what to look for. These eyes are called

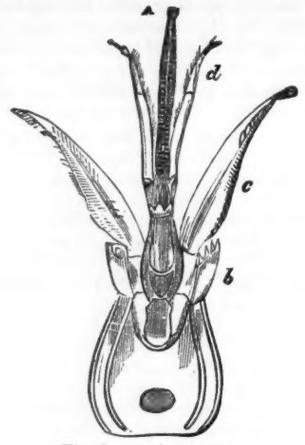


Fig. 8.—BEE'S TONGUE.

"compound eyes," being made up of a great number of minute separate eyes, or "ocelli." In the engraving the right-hand eye is entire, while that on the left-hand has a portion of the ocelli removed, and some of them placed singly to show their shape. I am not sure that you can see these so plainly in the bee, but I know that you can in the Dragon flies, or "Darning Needles,"

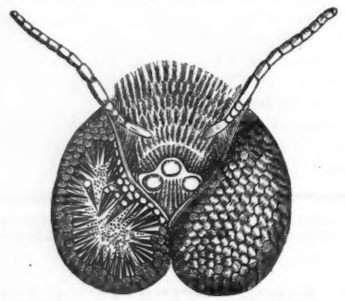


Fig. 9.—EYES OF A BEE.

which will soon be abundant, and which, by the way, contrary to the popular notion, are quite harmless. The number of these "ocelli" in the two compound eyes of a common house-fly is said to be about 4,000, and in some Dragon flies as many as 24,000!....Some have asked me to give them instructions for

Mounting Objects.

There are several methods of mounting; some objects are put up dry; others in Canada Balsam, or Dammar Varnish, or Glycerine Jelly, and others still in some kind of preserving liquid. For some kinds of mounting the cost of materials and apparatus is too great, and the amount of care and skill required are more than quite young people are likely to have, and those sufficiently advanced in microscopic matters to undertake the more difficult kinds of mounting, are likely to have a work on the microscope in which such matters are given more in full than could be possible in these articles. Some of the methods of mounting are so difficult as to be an art of themselves, but the one in use for the greater number of objects is

Mounting in Canada Balsam,

and that, too, is the simplest of all. Still this requires some care, and to describe it properly will require more room than I can give to it this month; besides I need to experiment a little to see if I can make some of the operations more simple. It is well not to be in a hurry about mounting; you who never before used a microscope can have hardly become skillful enough to make neat preparations for mounting. Yet I will try what we can do.

Aunt Sue's Puzzle-Box.

ANAGRAMS.

1. In sacred bible.
2. Alas! no convert, I.
3. Agents maim men.
4. I am in a soft net.
5. I tanned? not I!
6. O flagrant coin.
7. Into iron grate.
8. O fine fat cat.

NIP.

SQUARE WORD.

1. A foreign city. 2. Pretty in a landscape. 3. To happen. 4. Moral perceptions. 5. In every forest. XERXION.

BIBLICAL DOUBLE ACROSTIC.

The initials give a noted city, and the finals a famous man of olden time.—1. Part of a house. 2. A city of Sharon. 3. The wife of a Patriarch. 4. A word signifying "My husband." 5. An inflammable fluid. 6. A musical instrument. 7. The mother of a Prophet. ISOLA.

CROSS WORD.

My first is in Washington but not in Lee,
My next is in grasshopper but not in bee,
My third is in meadow but not in hay,
My fourth is in week but not in day,
My fifth is in sadness but not in glee,
My sixth is in wasp but not in flea,
My seventh is in ton but not in pound.
My eighth is in square but not in round,
My ninth is in yesterday but not in now,
My tenth is in when but not in how,
My eleventh is in walk but not in run,
My twelfth is in cannon but not in gun,
My thirteenth is in Krupp, who makes big guns,
Which weigh a very great number of tons.
My whole engages the attention
Of monarch and of peasant;
I should not like to have it here,
I know 'would not be pleasant.

JOHN W. WHEATLEY.

NUMERICAL ENIGMAS.

1. I am composed of 26 letters:
My 11, 6, 5, 19, is used for a summons.
My 10, 17, 4, 15, is used by the shoemaker.
My 9, 8, 14, 24, 5, is burdened.
My 25, 24, 26, 2, is what we all need.
My 16, 12, 1, 14, 24, 5, is inelegant.
My 7, 3, 13, 22, is to thrust.
My 23, 21, 20, 18, is the same as the last.
My whole is a well-known proverb. W. H. S. F.

2. GEOGRAPHICAL ENIGMA.

I am composed of 28 letters:
My 16, 18, 2, 12, is a territory.
My 4, 10, 17, 7, is a river in Asia.
My 24, 26, 6, 5, 3, 15, is a river in New York.
My 11, 14, 12, 8, 19, 4, 9, 21, 4, 4, is a river in Pennsylvania.
My 22, 1, 25, 5, 23, 13, is a lake in one of the Middle States.
My 20, 12, 10, 5, 4, 27, 28, 3, is the Capital of a Southern State.
My whole is where this enigma was made. F. W. PARKS.

SYNCOPATION AND TRANSPOSITION.

(In each of the following sentences are two blanks; one letter is to be taken from the word that fills the first blank, and the rest of the letters are to be transposed, to make a word that shall fill the second blank and make sense of the sentence; *e. g.*—"The men took their —— with them to ——— the premises." Fill the first blank with the word "wives," syncopate the letter s, and transpose the remainder ["wive"] into the word "view" for the second blank.)

1. The —— was escorted by a ——. (The remainder not transposed.)
2. I ate a boiled —— at ——.
3. The —— was pleased with —— visit.
4. I procured the ——, but I had to give a pretty good —— for it.
5. The —— was situated at the end of the ——.
6. Sometimes it is not —— to —— "No."
7. I —— that the plant is a species of ——.
8. They managed to —— the officers after fighting their ——.

Thanks for letters, puzzles, etc., to Lee, G. W. Evans, S. W. W., Juliet P., "Word-Builders" (I am glad that so many have enjoyed the game), J. H. B., B. A. Metz, Frank, Minnie B. B. (answers should always accompany puzzles sent for publication), Freddie L. Hurley, I. E. W., Marion, and others, whose favors I hope to answer at some future time.

ANSWERS must be postponed to next month.—ED.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

Aunt Sue's Chats.

ANNIE F. C.—Those "Shawl-covers" are very convenient for lady-travelers, and I will "give directions" for one with pleasure. You will need one yard and a half of "green Russia linen-twilled crash," 18 inches wide) (it costs about 22c. a yard), three 6c. pieces of alpaca skirt-braid (either black or brown as you prefer), and about three cents' worth of worsted to match the braid. Cut the main piece for the bag, 32 inches long, leaving the width of the material entire. Cut two circular pieces 9 inches in diameter, and 4 pieces like figure 3—eight inches by two—for the handles. Sew the braids on to the main piece, of which figure 1 shows an end, leaving nearly an inch space between them, and turn a hem about an inch and a half wide, on both ends. Make the three button-holes (see fig. 5). Work the feather-stitch be-

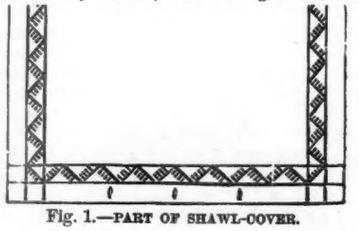


Fig. 1.—PART OF SHAWL-COVER.

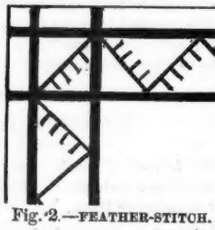


Fig. 2.—FEATHER-STITCH.

tween the braids, as shown in figure 1 (and more plainly in figure 2. The "feather-stitch" was very thoroughly described and shown in the May No. of the *American Agriculturist*, 1877). You can mark the vandykes with

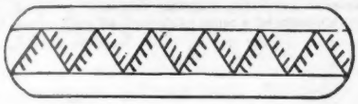


Fig. 3.—PIECE FOR HANDLE.

the corner of a square card. Double the braid and sew it around the edges of the two circular pieces (like welting). Sew on the braid, and work the feather-stitch as in figure 4. Sew the salvages of the main piece around the circles, allowing the button-hole hem to lap about an inch over the buttons. Now make your two handles. Baste each two pieces together and sew the braid along each (as in figure 3), then bind them around with the braid, and sew them on to the bag, as shown in figure 5. They are called "Shawl-Covers," but are used as satchels,

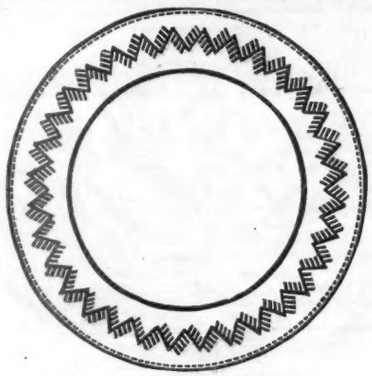


Fig. 4.—END OF SHAWL-COVER.

and you will be astonished to find how comprehensive and convenient they are. Figure 5 shows the cover complete.

F. B. H. asks, "Who were the Seven Sleepers, and how long did they sleep?"—A widely diffused legend of the early days of Christianity has it, that seven noble Christian youths of Ephesus, named Dionysius, Maximilian, John, Malchus, Serapion, Martinian, and Constantine, to

Fig. 5.—SHAWL-COVER FINISHED.

escape the persecutions of the Emperor Diocletian (A.D. 283-304)—some say of the Emperor Decius (A.D. 249-251) (both emperors persecuted the Christians)—took refuge in a cavern, where they were walled up to perish, but were made to fall asleep, and miraculously kept so for 230 years. When they awoke, they ventured down to Ephesus, and were amazed to find Christianity honored everywhere. It is said, that when they died their bodies were

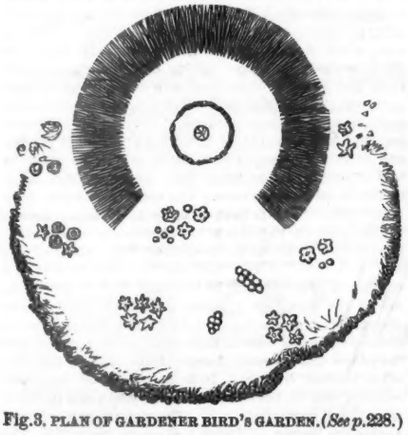


Fig. 3. PLAN OF GARDENER BIRD'S GARDEN. (*See p.* 238.)

taken to Marseilles, where a huge stone coffin is still shown as containing their remains in the Church of St. Victor, once a Benedictine Convent of the eleventh century. (What happened to the remains between A.D. 500 and 1000, history doesn't tell.) Reference is made to the same legend in the Koran, where it is told in "the Chapter of the Cave." The names of the sleepers there given, are Shazzernoos, Jemlika, Debbernoos, Kephestetjoos, Meshilina, Mernoos, and Mislina. The Turks think all these names of good omen, and put them on their buildings by way of fire insurance, and on swords to prevent them from breaking. Ketmehr, the dog, which is said to have accompanied them and to have stood guard over them the entire time, is also said to have been admitted to Heaven, together with the ram of Abraham's sacrifice, Balaam's ass—the ass upon which our Lord rode into Jerusalem, and the mare on which Mohammed mounted to Paradise. The story of Rip Van Winkle, by Washington Irving, no doubt grew out of the above legend.

The Doctor's Correspondence.

When in answer to several letters I promised to tell you

About the Telephone,

I knew that I had undertaken a difficult job. I last month told you something about sound, and how it could be sent to a distance. Sound is produced by the air, which, though we can not see, we can weigh, measure, and study it. But in the Telephone we have to do with electricity—something that can not be weighed and measured as air can be. Much is known about the *effects* of electricity, but just what it is and many other things about it, even the most learned are in the dark. In describing such difficult things as the Telephone to young people, we can only tell what is done, for it would take a volume to tell all that is known about matters concerned in it. You know a little about

One Kind of Electricity;

when you stroke the cat's back on a cold *dry* day, you hear a crackling, and in the dark see sparks. You have known the same kind of electricity—on the grandest scale, when you see the flashes of lightning and hear the thunder. Nearly all of you have seen the telegraph poles, and the wires stretching from one to another, and know in a general sort of way that messages are sent along that wire somehow by electricity. The electricity used in the telegraph is not the same kind that we get by rubbing the cat's back, or that crackles, when you suddenly pull off your silk neck-tie on a cold clear night, but a very quiet and manageable kind. If you are near a telegraph station, you may have seen several glass jars partly filled with a liquid in which are some bright pieces of metal. These jars together are called a Battery, and here is produced the electricity to work the telegraph. If we have a plate of copper, and another of zinc, and place them in a jar in which is some Sulphuric Acid (Oil of Vitriol), made weak with 12 or more times as much water, the acid will soon begin to dissolve the zinc, but it will not appear to trouble the copper very much. Now let us attach a wire to each, the zinc and the copper (and for this purpose it is best to use wire wound with fine cotton thread), as in figure 1. If we bring the two ends, *A*, *B*, of this wire together in the dark, a tiny spark may be seen; if we put between the ends of these wires a bit of very fine *platinum* wire, the platinum will become so hot that you can not touch it, perhaps hot enough to light a match, or even red-hot. If you join the ends of the copper wire, and bring a compass near it, you will find the needle pays no attention to the North Star, but will place itself at right angles to the wire. All these show that these copper wires are unlike ordinary wire, that something is happening in them, and if you think that this has something to do with the action of the acid on the zinc, you will be very near right. But here is something still more curious. Take

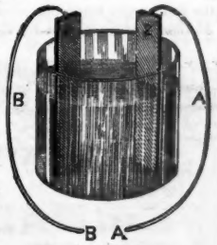


Fig. 1.—BATTERY.

Fig. 2.—ELECTRO-MAGNET.

A Bar of Soft Iron,

and having one of the wires, *A*, *B*, long enough, coil it around the iron bar, and then unite the two ends as before. Figure 2 shows this arrangement. Nothing will appear to have happened to the bar, but if you bring a compass needle near to one end of it you will see that it is very much disturbed, and will dance about, as you move it from side to side, in the wildest manner. Now bring a shingle nail, a small key, or other bit of iron, to the end of this bar; when very near it will jump towards it, and be held there with considerable force. Very likely the nail, or key, already on the bar, will hold up another, and perhaps several. You have no doubt seen a magnet—boys often have their knife-blades magnetized, and they amuse themselves by picking up needles, tacks, etc.—and you will at once say that this iron bar has been made a magnet, or has been magnetized. You may think that now you have a very nice large magnet that will be very amusing to have, so you unhook your wires, *A*, *B*, and down goes your nail, or key. You apply the bar to it—it behaves nothing like a magnet, and cares nothing at all about the nail. Hook together your wires again, and you have the bar as good a magnet as before. Bring together, and separate the wires, *A*, *B*, as rapidly or as often as you please, and the bar changes from no magnet and to a magnet every time. Now

We must have Names

for these curious acts, and the articles used to produce them. The glass jar with the two metals and acid is called a "Galvanic Battery," and frequently, only a "Battery." To increase the power, 10, 50, or more, may be joined, and it is still a battery. In practice, the metals are so arranged that the action only goes on when the battery is in actual use, and this is a great saving of materials. You have seen that, when the wires, *A*, *B*, are

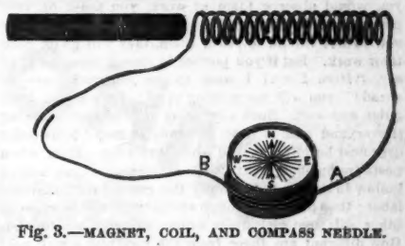


Fig. 3.—MAGNET, COIL, AND COMPASS NEEDLE.

joined, something happens in them—it appears as if something was passing through the wire from the zinc to the copper, and it is very convenient to call it a "current." Whatever it is, it is a form of electricity, and to distinguish it from "frictional electricity," produced by rubbing other things besides the cat's fur, it is called "Galvanic Electricity." As it passes along a wire, that is called a conductor, and the ends of the two wires, whether that may be a foot or 100 miles long, are the poles. Here is one point I wish you especially to recollect: the wire was coiled around the bar of *soft* iron, and when the current passed through the wire, it did not touch the iron at all, as the thread around it prevented, so no electricity passed *into* the bar, but only *around* it—yet this bar behaved in a most unusual manner, it picking up nails, etc., and it was for the time a magnet. There are many cases in which an electrical action in one body, causes a similar action in a body near by. If you will recollect that the wire coiled around the bar *induced* it to act like a magnet, you will not forget the philosopher's name for it—as they call it *induction*, that is, magnetism—which is still another form of electricity, is induced in the bar of soft iron.

Recollect about Induction,

for it is a most important matter, as upon it depends the working of the Telegraph as well as the Telephone. But you know that some magnets stay active, and not like this iron bar, come and go. If we prepare a very strong "Electro-magnet," as this kind, like the iron bar is called, and then properly rub it against a bar of *steel*, that steel will become a magnet, *and remain so*. This may be a small bar like a needle, or a large one, a foot or more long. If we hang the needle by a very fine hair, or stick it through a bit of cork and float it on water, one end will point north, and the other south; the end that points north is the north pole, and the other the south pole of the magnet—names applied to a magnet of any size. If the magnetic bar is straight, its north and south pole are far apart; if bent up like the letter U, it is called a horse-shoe magnet, and its poles, though close together, are still north and south. Now, suppose you have a bar magnet, and a coil of wire, as in figure 3; pass the magnet within the coil, and immediately there will be a disturbance set up in the wire; a compass needle, if surrounded by the wire, will at once dance about and take a position, and when the magnet is removed from the coil, the needle will go back to its former place, and as often as this is repeated, just so often will the compass be disturbed. If the coil were a sufficiently large one, made of a very long wire, and the bar magnet very strong, we would take away the compass needle and bring the two ends of the wire of the coil near together; then, on passing the magnet into the coil, we should get a spark! Now you have this wire acting just as the wire did in No. 1, when a current of electricity was passing through it. You have seen that a current of electricity passing through a coil of

covered wire, can *induce* magnetism in a bar of soft iron placed within the coil, and in this last case, a permanent —or steel-bar magnet can induce electricity when placed within a similar coil of covered wire.

Most Wonderful, Indeed,

is this matter of induction; and I have given some space to telling you about it, as, until it was discovered, it was not possible to have either Telegraph or Telephone—and it is not possible to understand the Telephone, unless you have a general notion of this. More than this—it shows how closely magnetism and electricity are related, as we see that either can produce the other. In the next paper I hope to get to the Telephone itself, so keep in mind this talk about induction. THE DOCTOR.

About some very Curious Birds.

Those of you who live in the country with your eyes open—many, and not young persons altogether, are practically blind, for though they have eyes, they see but little that goes on about them—can find much to interest them in watching the ways of birds. Indeed, those who live in villages and towns can enjoy something of this, but the birds that will stay about houses are fewer than in places where there are woods and shrubs. It is very curious to examine some birds' nests when built, and still more interesting to watch the birds when building. If you would observe them at work, you must be very patient, and keep very still. When the birds find that you do not intend to harm them, they will go on with their work. But if you pounce in among them, as if to say, "Here I am! I want to see you work, now go ahead!" you will see nothing at all. Take a seat, keep quiet, and wait. Such a bringing of bits, such a talking it over, and such a time generally as many birds make over nest building, is well worth watching. Then, when nests are finished, what a wide difference! Some, a mere hollow in the sand, or among the grass, hardly cost any labor; then others are rough sticks, with a little grass or other soft material upon which the eggs are to rest. How different are these from the carefully woven nest of the common Robin, with its foundation of coarse straw and weeds, all finely plastered, and then lined with moss and soft material. The Robin's nest is a coarse affair when compared with that of the little Humming Bird, built of soft down from the ferns, and so carefully covered by lichens, all neatly glued on, that it looks so like a lichen (or "moss") covered knot, as to be but rarely discovered. These nests are all interesting, but among our birds the Oriole, or Golden Robin, shows the greatest ingenuity. It makes a long bag, which is woven of the strong bark of weeds, of strings, ravelings, or any other such material as it can find, and doesn't object to a bit of lace edging, or other finery that it may come across; this nest it hangs to a slender twig, where it is far out of the reach of boys, who know it as the "Hang-bird's nest." All these affairs built by our birds, are for use; they are places in which the eggs are to be laid, and young ones reared. You will be much interested in examining the various styles of nests, and will wonder, as many others have done, why some birds get along with very little trouble in preparing their nests, and others take the greatest pains in making them.

But as curious and pains-taking as the nests of some of our birds are, what shall we say to a bird which builds a house just for the fun of it—not to be used as a nest, but just to frolic in! It seems so strange a story that we should find it difficult to believe it, had not several naturalists given an account of these Bower Birds of Australia, and their structures been taken to Europe. Strong grasses are stuck up in such a manner that they meet at the top, stones being put around to hold them in place. As these houses are not for use, but for sport, the birds these bowers are merely pleasure halls. The birds and their Bower are shown in figure 1. But as strange as this is, what will you say to a bird that not only builds a bower or hut, but makes a garden in front of it! The European gardening journals that have come of late, have accounts of a remarkable style of gardening—done by birds. An Italian naturalist, who has been exploring and collecting new and rare plants in New Guinea—which you know is an island just north of Australia, and not far below the Equator—brought home specimens of a new plant, an Orchid, and gives an account of the curious use made of its stems by the natives—that is, the feathered natives. You all may not know that among the family of plants called Orchids, are some of the most showy and curious of all plants; they are much valued by cultivators, and some of those in tropical countries grow upon the branches of trees, and never in the ground. The Gardener Bird is related to the Bird of Paradise, but is not, like that, a brilliant bird, it having brown plumage, and is about the size of a dove. The bird chooses a level place, where there is the stem of a shrub about the size of a common walking-stick. Around this it builds up a cone of moss, to make a central pillar about two feet high. Then twigs are placed all around, one end resting on this pillar, and the other on the ground, all at regular distances, to make a hut, as seen in figure 2, about three feet across. These twigs are all of a new Orchid discovered by Signor Beccari, the naturalist, which remain alive for a long time. Having built its house, and of course left an opening for a door, this bird does what the natives of the island have not learned to do, it immediately goes to work to fix up its front yard, or make what the writer calls a garden. It brings nice, clean moss, and places it carefully in front, and partly around the house, taking care to remove every stick and stone. When the lawn is ready, like a good gardener, the bird lays out its flower-beds; but it has not quite learned all about gardening, and does not cultivate, but it picks all the bright flowers, and brilliant berries, and other fruits, and places them in groups upon its turf of moss. When these fade, they are taken away and replaced by fresh ones. The traveler evidently took more notice of plants than of birds, as there are several things he omits to tell that we should like to know; he does not tell us about the nest, though he speaks of this as "the home" of the bird, and that the flowers and fruits are gifts brought by the male bird to please its mate. He says that the natives call the bird *Buruk Gurea*, which means "master-bird," and that they never destroy the nests, even if in the way. The bird imitates the songs and screams of other birds, and in that way often mislead hunters. It is, at any rate, a most curious bird, and we hope that some one who visits its country will tell us more about it. The plan of the house and garden are shown in figure 3, given on page 227. The small circle is the central pillar of moss; the outer circle is the stems that form the hut; the outer line shows the extent of the garden of moss, and the spots between this and the house, show the groups of flowers and fruits.

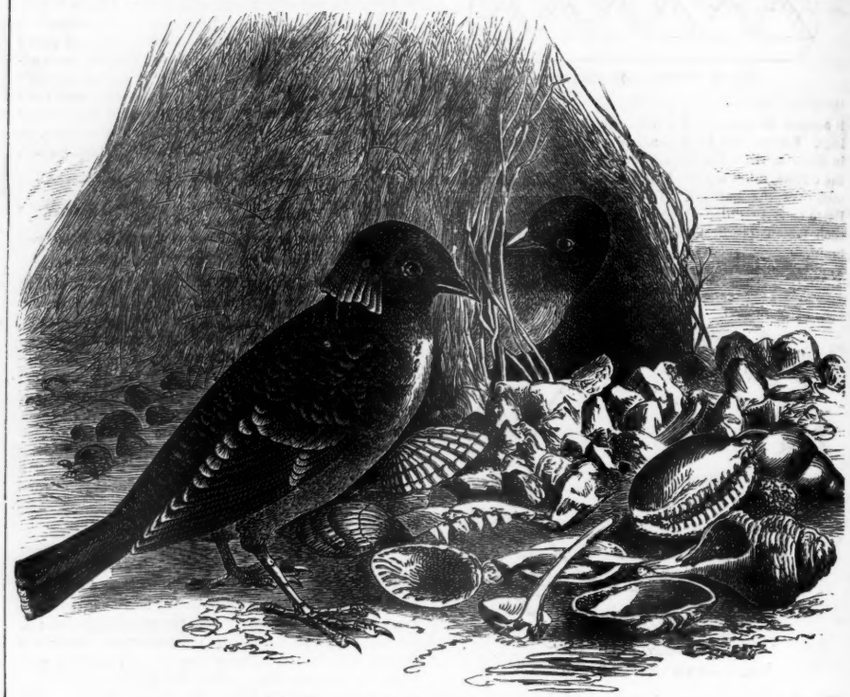


Fig. 1.—THE BOWER BIRDS OF AUSTRALIA.

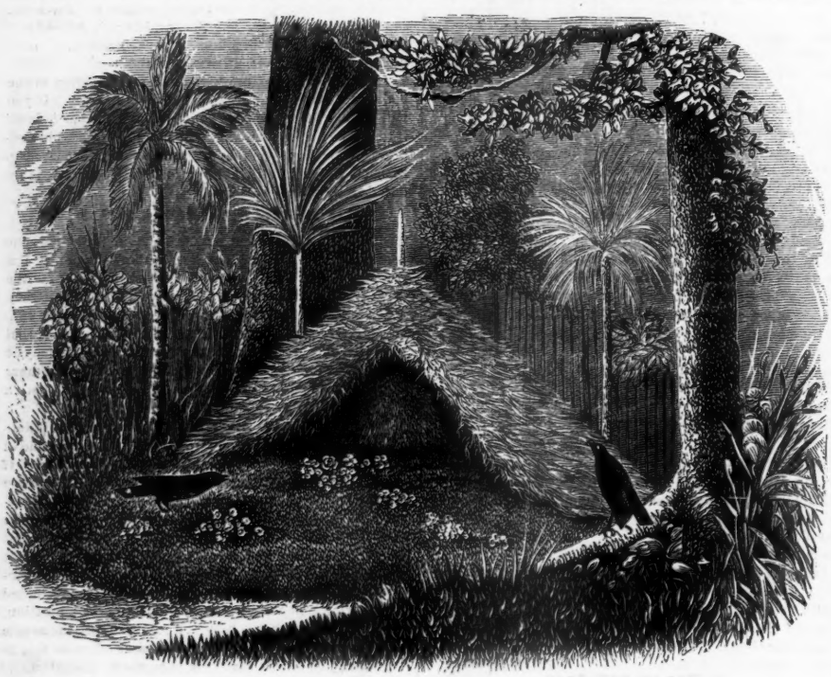


Fig. 2.—THE GARDENER BIRDS OF NEW GUINEA.

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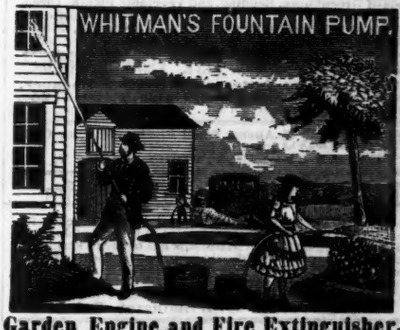

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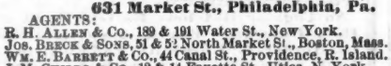
T. HAWLEY & Co., 93 Water St., Bridgeport, Conn.
C. E. WALBRIDGE, 299 & 301 Washington St., Buffalo, N. Y.

The "A. B. C."



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[TRADE-MARK PATENTED.]

Every Farmer should Have One. Simplest, most durable and perfect Sickle Grinder in the World. A boy can run it. Can be changed from an Oscilating to a stationary Stone in a moment. Is the best Grindstone in use for all purposes. For Sale by all dealers. Good Agents and canvassers wanted. POWELL, STEVENS & DOUGLAS, Waukegan, Illinois.

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DIGS IRISH OR SWEET POTATOES

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Cotton Seed Huller

AND FEED-MILL COMBINED,

For Plantations and Oil-Mills. Used by Planters, the Oil-Mills in New Orleans and through the country. Send for Circulars and Judges Report. Pay for itself in a few weeks. D. KAHNWEILER,

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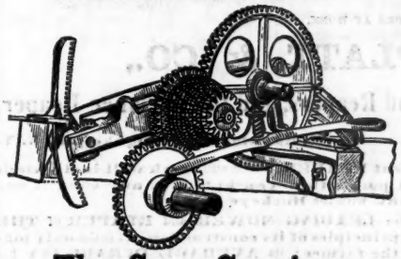

The Cone Gearing.

The above cut represents the most popular improvement ever made in Grain Drills; it is a system of gear wheels, to regulate the quantity by making the feeders revolve faster or lower, but without removing or changing any parts.

It can be changed without stopping the team, and is accurate to a plat.

The Drill has the Force Feed Grass Seeder, Patent Hoe Shifter, Surveyor, and when wanted, Fertilizer and Spring Hoes.

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The Birdsell Clover Separator,

SOUTH BEND, IND.

Agricultural Insurance Company, of Watertown, N. Y.

Capital $200,000.00. Net Surplus, $301,989.97. Total assets for the security of Policy holders, January 1st, 1878, $1,058,157.60. Insures only Farm Property and Residences against fire and lightning. Takes no business risks.

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REVERSIBLE—Double Ender—doing work of sixty men by horse-power at cost of six! Steam Machines, costing less than $10 per day to run, doing from $100 to $140 work. Circulars from RANDOLPH BROS.,

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FELT CARPETINGS 20 to 45 cts. per yard. **FELT CEILING** for rooms in place of Plaster. **FELT ROOFING** and **SIDING.** For circular and Sample, address C. J. FAY, Camden, N. Jersey.

E. & O. WARD, PRODUCE COMMISSION MERCHANTS.

POULTRY, GAME, BUTTER, &c., &c.

Also Agents for Hornby's Steam-cooked Wheat and Oats.

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THE CHEAPEST, BEST And Easiest in Draft.

Agricultural Implements, Machines, Seeds and Fertilizers

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189 & 191 Water Street, NEW YORK.

MONTGOMERY'S Improved Rockaway Fan.

215 Premiums and 15 Silver Medals.

The best Fanning Mill for cleaning all kinds of grain in the world. Has taken premiums over all others wherever exhibited. No Farmer can afford to be without one.

Prices greatly reduced!

Manufactured only by

DORSEY, MOORE & CO.,

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The Chamberlin Screw Stump Machine,

after 10 years test, has proved its superiority over all others, by its great exhibition of strength and durability, combined with cheapness and ease in pulling all classes of stumps. The Company's challenge of $1000 for a stump machine which would excel theirs, has stood since 1867 without being taken. They build 6 different sizes of machines, to pull all kinds of stumps. They make Subsoilers and Ditching Plows. For Particulars, Prices, etc., address THE CHAMBERLIN M'F'G CO., Olean, N. Y.

Big Giant Corn Mill,

Every Man His Own Miller.

The only Mill that will grind Corn with Shuck on without extra expense. The only Mill grinding Corn and Cob successfully that will grind Shelled Corn fine enough for family use.

Grinds twice as fast as any other Mill of same size and price.

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STRAUB MILL COMPANY. CINCINNATI MILL MACHINERY

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Manufacturers of Buckeye Mowers and Reapers, and the Adriance Reaper,

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The **ADRIANCE** is a **light, strong, simple, efficient REAPER,** which will **work well in all kinds and conditions of grain,** and combines **more good points than can** be found in **any** other. It has a **folding platform,** and is in all respects **worthy** to **rank** with the **Buckeye Mower.**

The **BUCKEYE** has for **21 years** held its position as the **LEADING MOWER** and **REAPER** of **THE WORLD,** because it is **superior to all others** in the **principles of its construction.** It is the **only machine which has given entire satisfaction to the farmer;** its **AVERAGE DURABILITY** has been **MORE THAN DOUBLE** that of others, and the **COST OF KEEPING IT IN REPAIR LESS THAN ONE-HALF.**—Prices **Reduced** to the lowest point at which the high standard of excellence in material and workmanship can be maintained. Descriptive Circulars forwarded by mail.

THE JOHNSTON HARVESTER CO.,

Manufacturers of

Self Raking Reapers, Combined Machines, and Mowers,

Send for Catalogue. **Brockport, N. Y.**

Patent Tooth Horse Rake,

which does not scratch the ground and lust the hay. **Best Rake** made. Buy no other rake and have clean hay.

New **VICTOR LEVER FEED CUTTER,** *Largest and Best made.*

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HAY LOADER.

A perfect machine for rapidly pitching hay, barley, and all loose grain on the wagon in the field. Saves as much time and money as the mower and horse rake. Thousands in use by the best farmers in the country. Price reduced. Send for Circulars to the manufacturers,

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RAILWAY PITCHING APPARATUS.

Chapman's. Best Fork and Conveyor in use. Unloads and carries Hay, Grains, &c., over deep mows, into sheds, barns, &c. Saves labor, time, money. Sent on trial. Circulars sent. Agents wanted.

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Consisting of Carrier, Grappling Fork, Pulleys, and Hooks. For unloading Hay, Grain, Beans, Corn Stalks, loose or in bundles, etc. Can be used in any barn. Also, Improved Stacking Apparatus. Send for Circular, and get valuable information.

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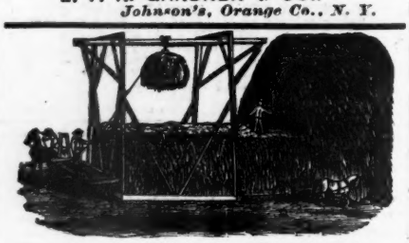

Use the Anti-Friction Hay-Carrier,

For elevating and conveying Hay, Grain, etc., in barn, barrack, shed, or field. It elevates perpendicularly and conveys horizontally any desired distance. No trouble about getting over high beams and to the end of deep mows, or to the top of high stacks. **Thousands are now in use.** Five tons have been stacked and the frame moved in 45 consecutive minutes. Fifty tons have been stacked in a single day with this Frame and Carrier. Send for Circular "2" to

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THE UNION RAILWAY

HORSE POWER & Premium Thresher. This power produces **much more power** than other railway powers, with **much less elevation.**

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WITH

PATENT LEVEL TREAD

AND

SPEED REGULATOR.

Heebner's Improved Threshing Machines. Send for Illustrated Circulars to

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For Sale at a Bargain.

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SPRING STEEL TOOTH Horse Rakes.

Highest Award. Medal of Honor at the Centennial and Vienna Exhibitions.

THE CHAMPIONS OF THE WORLD.

No Cogs or Ratchets, Easiest Hand or Horse Dumping. Purchasers prefer them to all others for Durability and Efficiency. Fully guaranteed; so no risk is incurred in ordering from us. Responsible Agents wanted, where we have none.

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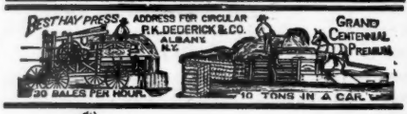

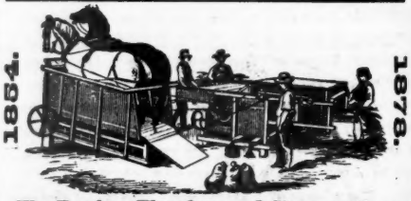

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B. GILL & SON,
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HORSE HAY-FORK.

BEST IN THE WORLD.

Descriptive Catalogue sent free.

Pennock Manufacturing Company,
KENNETT SQUARE, Chester Co., Pa.

BARNES' REVOLVING HAY RAKES,

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AMERICAN AGRICULTURIST.

ORANGE JUDD COMPANY, Publishers, 245 Broadway, N. Y.

ANNUAL SUBSCRIPTION **Terms** (always in advance): $1.60 each for single copies: Four copies, $5.20 each: Ten copies, $10.30 each: Twenty copies and upward, $1.10 each. These rates *include Postage*, in each case, which is pre-paid *by the Publishers*. Papers are addressed to each name.

The full Descriptions and Illustrations of the Premiums, with various Notes and Explanations, were published in 8 extra pages of our October number, which can not be repeated for want of space. Any one not having that number, can have one mailed, post-paid, for 10 cents; or a Premium Sheet only, will be mailed to any address without charge.

PREMIUM Explanatory Notes. N. B.

Read and carefully Note the following Items: The Table herewith tells the *name* and *cash price* of each article, and (in last column but one), gives the number of names sent in at the regular price of $1.60 a year that will secure any premium article. (The last column gives the number of names at the lowest club price for 20 or more names, that is $1.10 each, but only a part of the premiums come under this head. Some persons quickly raise large clubs by taking all the names at $1.10 each, and themselves pay the difference, 50 cents each, and even thus get the premium articles very cheaply.)....(*a*) All subscribers sent by one person count, though from several different Post-offices. But....(*b*) Tell us with each name or list of names sent, that it is for a premium....(*c*) *Send the names us fast as obtained*, that the subscribers may begin to receive the paper at once. Any one can have any time desired, up to next July, to complete any list, but every premium desired will be sent as soon as earned and ordered....(*d*) Send the exact money with each list of names, so that there may be no confusion of money accounts....(*e*) Old and new subscribers all count in premium clubs, but a portion at least should be *new* names; it is partly to get these that we offer premiums to canvassers....(*f*) One or two Specimen Numbers, etc., will be supplied free, as *needed* by canvassers, (when 3 cents per copy is furnished to pre-pay postage), but they are expensive, and should be used carefully and economically, and where they will *tell*. Other specimen numbers will be sent, post-paid, *to canvassers only*, for 10 cents each. The price to others is 15 cents....(*g*) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways is at *our* risk; otherwise it is not.

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It often happens that persons, who have not time to secure these valuable and useful premium articles by raising clubs of subscribers, are desirous of purchasing one or more of them, and wish us to procure or select them. For the accommodation of such, *we will supply and send most of these premiums for cash*, at the prices in the Descriptive List, and prepaid or otherwise, as stated.

Table of Premiums

For Subscribers to American Agriculturist.

[In the following table is given the price of each article, and the number of subscribers required to get it *free*, at the regular rates of $1.60 a year, and also (with a part of the premiums), at the club rates of $1.10 a year, postage included, which is prepaid in all cases *by the Publishers*.]

TABLE of Premiums and Terms For Volume 37—(1878). Open to All—No Competition.

No.	Names of Premium Articles.	Price of Premiums.	Number of Subscribers required at $1.60	Number of Subscribers required at $1.10
1	Tea Set (Middletown Plate Co.)	$30 00	66	....
2	Ice Pitcher (do. do. do.)	$18 00	30	180
3	Cake Basket. (do. do. do.)	$7 50	16	63
4	Cake Basket...(do. do. do.)	$10 00	18	100
5	Casters.... (do. do. do.)	$5 25	13	55
6	Casters.... (do. do. do.)	$7 50	16	63
7	Casters.... (do. do. do.)	$10 50	19	120
8	Butter Cooler (do.. do. do.)	$6 50	15	60
9	Pickle Jar and Fork. (do.)	$5 00	12	50
10	Syrup Cup with plate. (do.)	$6 25	15	60
11	Child's Cup (do.)	$3 50	8	25
12	Twelve Teaspoons (Meriden Cutlery Co.)	$7 25	16	63
13	One Dozen Tablespoons (do. do.)	$14 50	22	147
14	One Dozen Table Forks (do. do.)	$14 50	22	147
15	Ladies' Folding Pocket Scissors, (do.)	$1 50	4	....
16	Child's Knife, Fork & Spoon...(do.)	$3 00	8	30
17	French Cook's Knife, Fork, & Steel (do.)	$3 75	9	37
18	Case of Scissors (U.S. Steel Shear Co.)	$4 00	10	40
19	Portable Writing Desk, (C. W.F. Dare)	$1 75	4	....
20	Walnut Work Box, (do.)	$1 25	4	....
21	Buck-Saw for Boys, (do.)	$ 50	2	....
22	Little Girl's Wash Set, (do.)	$1 00	3	....
23	Sled, (do.)	$2 00	5	20
24	Spring Horse, (do.)	$11 00	18	110
25	Boy's Wagon, (C. W. F. Dare)	$5 00	13	50
26	Boy's Tool Chest, (E. I. Horsman)	$1 00	3	....
27	Boy's Larger Tool Chest (do.)	$2 50	7	25
28	Boy's Larger Tool Chest (do.)	$5 00	12	50
29	Pat. Magic Bellhead Pencil (Ludden & Taylor)	$1 50	4	....
30	Ladies' Magic Charm Pencil (do. do.)	$2 00	5	20
31	Gents' Magic Charm Pencil (do. do.)	$2 75	7	27
32	Gold Pen, Telescopic Case (do. do.)	$2 50	7	25
33	Gold Pen and Pencil, Elegant (do. do.)	$5 50	13	55
34	Knives and Forks (Patterson Bros.)	$14 75	22	147
35	Knives and Forks (do. do.)	$18 50	28	185
36	Carver and Fork (do. do.)	$3 75	9	37
37	Pocket Knife (Meriden Cutlery Co.)	$1 50	4	....
38	Pocket Knife (do. do.)	$2 00	5	20
39	Pocket Knife (do. do.)	$2 75	7	27
40	Ladies' Pocket Knife (do. do.)	$2 00	5	20
41	Multum in Parvo Knife (do. do.)	$3 50	9	35
42	Crandall's "John Gilpin"	$1 00	3	....
43	Crandall's "District School"	$1 00	3	....
44	Crandall's Masquerade Blocks	$ 75	3	....
45	Crandall's "Acrobats"	$1 00	3	....
46	Crandall's Building Blocks	$1 50	4	....
47	Crandall's "Menagerie"	$2 00	5	20
48	Pair of Skates (Patterson Bros.)	$3 50	9	35
49	Boudoir Clock (S. B. Jerome & Co.)	$3 50	9	35
50	Wire Bed Mattress (H. Buckingham)	$12 00	19	120
51	Houchin's Patent Pocket Cook Stove	$1 85	4	....
52	Household Press, (W. A. Boardman)	$2 00	5	20
53	Aquapult, (Force Pump), (W. & B. Douglas, Middletown, Conn.)	$9 00	17	90
54	Self-adjusting Gold-plate Watch Key, (J. S. Birch.)	$1 00	3	....
55	Pocket Tool Holder (Miller's Falls Co.)	$1 00	3	....
56	Piano, Splendid 7-oct. (Steinway & So's)	$650 00	625	....
57	W. S. Blunt's "Universal Force Pump"	$12 00	19	120
58	Silver Watch (American Watch Co.)	$30 00	44	....
59	Bracket Saw (Millers' Falls Man'f'g Co.)	$1 25	4	....
60	Payson's Indelible Ink—Pen, etc	75	3	....
61	Excelsior Pocket Microscope (Bausch & Lomb Optical Co.)	$2 75	7	27
62	Abbott Pocket Microscope (L. G. Abbott)	$1 50	4	....
63	Cahoon's Broadcast Seed-sower	$5 00	12	50
64	Moore's Floral Set (Moore Man'f'g Co)	$1 00	3	....
65	Garden Seeds & Flower Bulbs (select'n)	$2 00	5	20
66	Planet Jr. Combined Drill & Hoe (S. L. Allen & Co.)	$12 00	19	120
67	Breech-loading Pocket Rifle (Stevens)	$16 00	24	160
68	Double Barreled Breech-loading Gun	$30 00	66	....
69	Shot-Gun (E. Remington & Sons)	$6 00	14	60
70	Shot Gun, (breech-loader, (do. do.)	$23 00	36	....
71	Creedmoor Long Range Rifle No. 1 (do.)	$100 00	110	....
72	Creedmoor Long Range Rifle No. 2 (do)	$85 00	100	....
73	Creedmoor Long Range Rifle No. 3 (do)	$60 00	76	....
74	Hunting & Target Rifle (Remington)	$22 00	34	....
75	Vest Pocket Pistol (Remington)	$3 75	9	37
76	Revolver (Remington)	$9 00	17	90
77	Turn-table Apple Parer (Goodell Co.)	$1 00	3	....
78	Climax Apple Corer & Slicer (do.)	$1 00	3	....
79	Family Cherry Stoner (do.)	$1 00	3	....
80	Bay State Apple Parer & Slicer (do.)	$1 50	4	....
81	"Saratoga" Potato Peeler & Slicer (do.)	$1 00	3	....
82	Sewing Machine (Remington)	$30 00	66	....
83	Family Scales (Fairbanks & Co.)	$14 00	21	140
84	Clothes Wringer (Best—Universal)	$ 8 00	16	80
85	Worcester's Great Illust'ed Dictionary	$10 00	18	100
86	Any back Volume Agriculturist (Unbound. Postpaid.)	$1 75	....	20
87	Any Two Back Volumes do.	$3 50	....	35
88	Any Three do. do. do.	$5 25	12	50
89	Any Four do. do. do.	$7 00	15	60
90	Any Five do. do. do.	$8 75	17	80
	—(Each ad'l Vol. at same rate.)			
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99	A $15 Library do.	$15 00	24	....
100	A $20 Library do.	$20 00	31	....
101	A $25 Library do.	$25 00	38	....
102	A Choice of Good Books. (See Description, p. 408.)			

☞ *Every Premium article is* **new** *and of the very* **best** *manufacture. No charge is made for packing or boxing any article in our Premium List. The Premiums,* **Nos. 15, 18, 29 to 33, 37 to 41, 49, 51, 54, 55, 59 to 62, 65, 75, 76, 86 to 102,** *inclusive, will each be delivered* **FREE** *of all charges, by mail or express (at the Post-office or express office nearest the recipient) to any place in the United States or Territories.—The other articles cost the recipient only the freight after leaving the manufactory of each, by any conveyance desired.* **Illustrated** *and* **Descriptive List** *sent free to applicants.*

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 209.

Gapes in Chickens.—"A Subscriber," Newport, R. I. Gapes is caused by the presence of small worms in the wind-pipe. Young herbivorous animals of all kinds are very subject to these parasites, the eggs of which are supposed to be dropped in the excrements of the older animals, and swallowed by the young ones. Prevention is the best remedy. This consists, in regard to poultry, in removing all the droppings from the houses, keeping the soil of the yards fresh by digging over the surface, or providing new locations for them every season. Some camphor dissolved in the drinking water is said to be a remedy, but as we have always avoided the disease by precaution in our yards, we have no experience as to alleged cures.

To Estimate the Amount of Cord Wood in an Acre.—"E. L.," St. Louis. To estimate the quantity of cord wood on an acre of wood land, requires experience. A person who has been engaged in clearing land and cutting wood, could give a very close estimate at a glance, but other persons would make the wildest guesses. An inexperienced person may proceed as follows: measure out 4 square rods of ground; that is, 33 feet each way, and count the trees, averaging the cubic contents as near as possible of the trunks, and adding one-fourth of this for the limbs. Then, as 128 cubit feet make a cord, and the plot is one fourth of an acre, the result is easily reached. Fairly good timber land should yield a cord to every 4 square rods. A tree two feet in diameter and 30 feet high to the limbs, will make a cord of wood, if it is growing in close timbers, and the limbs are not heavy. If the limbs are large and spreading, such a tree will make 1½ to 1¾ cords. A tree one foot in diameter will make only a fourth as much as one twice the diameter. In estimating, it is necessary to remember this fact.

Oil-Meal—Corn-Mill.—"W. L. C.," Sullivan Co., Pa. Linseed, cotton-seed, and oil-cake, are very valuable feeding stuffs. They are worth more than corn, and should be fed in small quantities. We are using the Big Giant corn-mill, and find it a good one. The Orange Judd Company keep *no* seeds for sale.

The Dodge Hay Press.—By an oversight, the address of the manufacturers of the Dodge Hay Press was omitted in the article describing this press in the *American Agriculturist* for Oct., 1877. The manufacturers are the Mohawk and Hudson Manufacturing Co., Waterford, N. Y.

Directions for Castrating and Spaying.—"J. D. B.," Jackson, Mich. These operations are described in Dr. Dadd's American Cattle Doctor.

The Value of Corn-Fodder.—"R. S. H.," Lennoxville, Canada, writes: "I have tried most all kinds of corn as a dry food for stock in winter, from the Dwarf Sweet to Evergreen Mammoth, and find no other gives so good returns as the early Sugar corn. It is very sweet, will grow in good ground six feet high, and if sowed thick in drills, will give from five to six tons of excellent fodder per acre. It should be sowed about the first of June in drills, two and a half feet apart in rich ground, and if the season is any way favorable, can be cut from the first to the middle of August. It should be bound in small bundles and set up in shooks, to dry, and it will become so well cured before wet weather sets in, that it can be packed away as well as hay, or straw, without being damaged by moulding. The seed should be sowed thick, not less than two bushels of good seed per acre. Horses, cattle, and sheep, are very fond of it, and with a small quantity of hay thrive well, and milch-cows do much better than when fed upon hay alone. It requires the manure in the drill, so that the corn will have a quick growth and it will be very tender.

Soot on the Garden.—"H. M. B.," Waterbury, Conn. Yes, soot from chimneys is of value in the garden, and is, so far as known, excellent for all crops, but too scarce and valuable to be wasted upon the coarser kinds. Soot is the condensed matters which escape in the combustion of wood and bituminous coal. The constituents of the wood and coal form various new compounds which, coming in contact with the cool chimney, condense and harden there. Our common hard

coal (anthracite,) forms no soot proper. Soot consists largely of charcoal, various salts, especially those of ammonia, and peculiar substances related to creosote. We can not put our hand on a good analysis showing the difference between soot from wood and from soft coal, and a recent work says such are much needed. There is a general impression that the soot of bituminous coal is the richer in ammonia salts. In Europe, where it may often be procured in large quantities, it is highly valued for all crops to which ammonia is beneficial, at the rate of 15 to 30 bushels per acre, on wheat and grass crops. In the garden its value as a fertilizer is scarcely greater than that of an insect destroyer; its creosotic matters being very fatal to most insects. For the garden it is very economically used as a liquid, 6 or 8 quarts to a hogshead of water. This remarkably stimulates plants that need it, and clears most of them from insects. Any gardener who has a good supply is fortunate.

Yellow Strawberry.—"J. S. G.," Dayton, O. There are several so-called "white" strawberries that are more yellowish or cream-colored than white. "Lennig's White" is cream-colored, with a fine blush, one of the handsomest as well as best of berries—when you get it. Then there are three or four of the Alpine class with white fruit, including the Monthly and Bush Alpines. A poor variety, called the "White Carolina," was formerly cultivated, and two, at least, of the Chilian strawberries would be classed as white; they have enormous fruit, but would not stand our climate. If you saw them "a great while ago," probably it was one of the Alpines, which are still cultivated by those who like them.

Alfalfa in New Brunswick.—"F. W. H.," St. Johns, N. B. Alfalfa is a plant that thrives best in dry climates. It was brought from Chili, a dry South American country, to California, where the climate is very dry. There it has thriven to a remarkable degree. But wherever there is moisture enough to produce good clover, alfalfa has not succeeded. It could not be grown in New Brunswick so profitably as clover, and it is a question if it would grow at all.

To Kill Wild Rose Bushes.—"G. F. C.," St. Joseph, Mich. To destroy wild rose bushes it is necessary to kill the roots, or they will throw up suckers and perpetuate the growth. This is a difficult plant to get rid of in most meadows. The best method known to us is to mow the bushes when the roses are in bloom, or in July, and if sprouts appear later, to cut them down before they ripen their wood. Later growth will be tender, and not survive winter. Next year they will be weak and sickly, and this treatment continued will destroy them.

Very Strange.—"W. W. Rubottom, of Spadra, has a rose tree with green roses upon it. * * * This curiosity is said to be the result of budding the white rose upon the Weeping Willow."....A green rose is not so strange, as we had one some 20 years ago, and have had them several times since. The manner in which "it is said to be" produced *is* strange, and would be stranger still were it true; but the strangest of all is that such false teaching should be found in the "Southern California Agriculturist," a journal generally so sensible in its teachings and so full of excellent promise.

Drawing Water with a Siphon.—"G. H.," Stark Co., Ohio. Water can not be drawn with a siphon over a hight of more than 25 to 28 feet. If the pipe is very smooth inside, and the flow of water is larger than one inch, a rise of 28 feet may be overcome; otherwise the friction and the adhesion of the water to the surface of the pipe, will prevent the flow from rising more than 24 or 25 feet.

Feeding Cattle for Profit.—A statement, made by an Irish farmer, relative to the feeding of calves from birth to ripeness for the butcher, with the method of feeding, and the cost, and the profit, is not without interest to us, when we consider the importance of the profitable feeding of animals, and the value of the manure to our rapidly changing system of agriculture. The calves cost $10 when two weeks old; that is, the dairy was creditod, and the stock account was charged with that sum, when the feeding of the calf was begun. Each calf received 4 quarts of skim milk per day, for 108 days, and for this period a daily average of 10 ounces of a mixture of linseed and cotton seed cake boiled with the milk, with four pounds of roots and green feed, and one pound of hay. After four months old, the daily ration was a pound and 4 ounces of a compound made of one part bran, one malt dust, two rape-cake, two linseed-cake, and four cotton seed cake, thoroughly broken and mixed together. Each month the ration was increased about five ounces per day. 7½ lbs. of roots or green clover, and 2 pounds of cnaffed straw were also given. The food cost about 4¼ cents a pound, and the expense of feeding could thus be closely calculated. The following table gives the result of feeding nine head of well bred animals, steers and heifers, from 18 to 25 months old.

Age. Months.	Dressed Weight.	Value.	Value of Manure.	Cost.	Profit.	Profit, per cent.
18	606	$113.60	$32.25	$110.00	$25.85	30
—	557	104.43	20.41	103.52	21.32	27
—	492	92.75	18.04	90.25	20.54	29
19	631	118.30	24.25	114.70	27.85	29
21	732	137.25	29.17	135.75	30.67	24
22	660	123.75	27.50	130.50	20.75	18
23	724	135.75	32.30	148.43	19.62	15
24	748	140.43	36.62	163.51	16.54	9½
25	748	140.25	38.25	169.75	8.75	6

The figures show a fact which is neither new nor surprising, viz., that the longer an animal is fed after it is mature, the profit decreases; or to use a well understood expression, after it has reached a salable age it begins "to eat its head off." This exemplifies also the fact that without keeping an accurate account of cost, etc., we can not hope to know the precise point where profit ends and loss begins. Generally the point is about the age of 20 months; that is, with early maturing breeds.

Tumors on the Legs.—"C. S.," Leominster, Mass. In scrofulous animals bunches, nodules, or tumors, frequently form upon the limbs. When these are upon a joint, it is sometimes dangerous to meddle with them, because in such conditioned animals wounds do not often heal readily, and an open joint may ensue, to the final destruction of the animal. So long as there is no lameness, it would be well to do nothing more than to apply a mixture of 7 parts of Glycerine and 1 part of Iodide of Potassium, which may help to the absorption of the tumor.

How to Burn Marl into Lime.—"J. S. P.," Bonneau's Depot, S. C. Marl can be burned into lime more or less impure according to the nature of the deposit, by putting it into heaps with brush-wood in alternate layers upon a foundation of logs, and setting the logs on fire. When the heap is thoroughly ignited, it should be covered with fine green brush and earth to confine the heat. In three days the operation will be complete. Shell marl, which is an impure carbonate of lime, and *not* the "green sand marl," if thus treated, will be made into a valuable fertilizer.

Soft or Hard Water for Cattle.—"C. H.," Ontario, Canada. Limestone water is probably not injurious for cattle and horses. In limestone districts we have the best grass, the best grain, and the best stock. The choicest localities, such as the blue grass region in Kentucky, Western New York, the Shenandoah Valley in Virginia, and the Misouri Valley in Ohio, are all in a limestone country with hard water.

How Many Calves can a Cow Raise.—"Q. A. B.," Meigs Co., Ohio. A good cow may be expected to milk during eight months of the year sufficiently to support a calf. If she is kept for raising calves, and the calves are weaned when 2 months old, she can supply four calves. When a calf is 2 months old it may be supported upon other food than milk, so that by managing well, one good cow can be made to raise 4 calves, if not more. A good milker, when fresh, will yield more than enough to feed one calf, and at least two calves can be fed from her milk for two or three months. If calves are designed for beef cattle, it is advisable to procure a good Shorthorn or a Hereford bull to sire them.

Corn Harvester.—"M. C. C.," Whiteside Co., Ill. A harvester that would cut corn and drop it in bundles, would certainly be a valuable machine, and if sold at a reasonable price, would be generally used. It is one of the improvements that farmers are anxiously waiting for. There are several machines made for this purpose, but none as yet that are satisfactory.

"A Hollow Tail."—"J. B.," Butler Co., Pa. In every cow's tail there is a portion where the bone is wanting, and the part is soft. This is natural, and not a state of disease. "Hollow Tail," and "Wolf in the Tail," are terms that have no significance, beyond the mere fact that something is wrong with the cow. It is not in the tail at any rate.

The German Farmer's System.—The mission of the true American seems to be to chase the setting sun. Ever on the march towards the west; or ever looking with longing eyes towards that wished for but unattainable locality which may be called his final resting place—because there is no beyond to it for him, and he can not go back—he is engaged chiefly in getting what he can from his land now, without thinking of the future. His successor, when he finally makes a sale, and westward flies, is a German farmer, in the majority of cases. But the German comes to stay; and having no thought of "the West," he sets about cultivating his farm in a methodical manner. He works without stint, and he saves without grudging; being industrious and economical, he succeeds and makes money rapidly. His children are as industrious and as careful as he, and his frau takes a hand with the hoe and does not regard the latest fashion in her dress. By and by the boys and girls marry, and the son is presented with a farm, the daughter with a dowry to start with, and the youngest boy sticks to the farm. Where such people live, thrift abounds.

Value of Gas Lime.—"Ottawa," Canada. Gas lime, when fresh, contains poisonous matter injurious to vegetation. But when it has been exposed to the air for some months, these bad qualities are lost, and the lime becomes mainly a mild carbonate. It may then be used upon clay or peaty soils, or meadows, at the rate of 50 to 100 bushels per acre, with benefit.

Treatment of Hoove.—"J. F. W.," Lancaster Co., Pa. When a cow is "blown," or suffering from "hoove," relief is often gained by giving one ounce of carbonate of ammonia dissolved in water, and a purgative soon after. If the cow has eaten too much dry feed, it is not well to give much water until the purgative has worked off. If she is "blown" by green feed, such as clover, the quickest remedy is to use the trochar and open the paunch, leaving the tube in the opening until the gas is no longer emitted.

Teasels as Handles.—Not the prickly remains of the flower heads, used to "tease and tear" a nap upon woollen cloths—lively handles these would make!—but the stems upon which these heads grow. These have been imported into England from the Continent in considerable quantities, and are likely to appear as one of the novelties of the season, as handles to ladies' sunshades and parasols. These teasel-stems are variously twisted, bent, and furrowed, and made more grotesque by the "fasciation" or soldering together of the branches, as we often see in asparagus and cockscombs.

Prices of Ordinary Shorthorns.—We learn that sales of young pure bred Shorthorn bulls and calves have been effected to a large extent in Kentucky at about $100 each; at this rate business is very brisk. 13 young animals were purchased by one buyer from Texas at an average of $75 each. At such prices a large demand from farmers and breeders may be looked for, and if some breeders would confine their efforts to the production of milking strains, a very great demand would arise from dairymen.

Periodic Ophthalmia in a Horse.—"B. F. A.," Macon Co., Mo. In periodic ophthalmia the eyes become inflamed and covered with a film; this disappears for a time, and again appears, perhaps several times in succession. The final result, however, is almost certain blindness. The only treatment is palliative; give a dose of cooling medicine, as one pound of salts; keep the horse in a clean stable; bathe the eyes in a solution of 4 grains of sulphate of zinc, in one ounce of water, and inject a little into the eyes.

Oil Paintings Distributed.—A large number of persons have sent us circulars, tickets, etc., of "A Grand Testimonial Gift Distribution of Oil Paintings." It seems that there has been a "drawing" of some kind, and those who have "drawn" pictures can have them by paying $2.10, to cover "expenses," and the express charges. We have received numerous requests to show this up as a "humbug." So far as the distribution is a game of chance, so far we hold it to be wrong. Of course the projectors of the scheme have an object in view. They are not afflicted with such a fit of generosity as will induce them to send paintings all over the country at one-tenth or one-twentieth of their value, unless they expect to gain something by it in the end. Now, while we utterly discountenance every game of chance, no matter by what name it may be called, we have no right—and in the question of humbugs we have to consider that both parties—the accusers and the accused, have rights—to set this matter down as a "humbug" unless we know it to be such. It all rests upon the question: is the painting sent—and recollect that no one is *obliged* to send for it—worth the cost of the $2.10 for expenses and the express charges. Now notions greatly differ. Let us suppose that all told, the cost of the painting is $5 to the one who receives it. If asked if an oil painting was worth $5, we really could not say. We could *readily* say that if an oil painting was, as such things sold at auction in New York, or other large city, and this is an excellent test of real value—*only* worth five dollars, or five times five dollars, we should not like to be obliged to possess it. But ideas, or notions, differ—we will not call them *tastes*, for they have not reached to that. There may be people—no doubt there are—to whom an "oil

painting," which could be produced for $5, at a profit, would be quite satisfactory. We can not write the thing down as a humbug, unless we know that the pictures are worth less than they cost to those who receive them. The only evidence we have as to the kind of paintings sent out, is from a lady in New Jersey, who writes:—"The *painting* has come, and it is one of the vilest, cheapest daubs imaginable, not worth the canvas it is on, and instead of adorning, as they say, 'the walls of the most sumptuous homes,' I would not put it in my kitchen, and would not give 25 cents for it." But as the thing is a game of chance—a "Gift Distribution,—the next painting may be *worth* 37½c. or 50c., and so up along. We can only say to those who do not like these offers, it is the easiest thing in the world to let them severely alone.

How to Rot Straw.—"J. T. G.," Sulphur Hill, Ind. Straw alone is not easily decomposed. This is seen in the case of straw used for thatched roofs, some of which are a hundred years old or more, and are yet sound. Still they have been exposed to heat and cold and wet for all these years. Straw can only be rotted quickly by mixing some actively fermentable matter with it. But straw may be used on Western farms to good purpose, by spreading it upon the ground and plowing it in. Thus all the benefit that could be derived in any way from the straw, will be gained by the soil, because in whatever manner we use the straw we do not really add anything to it. Much good may also be derived by spreading straw over winter grain, as a mulch and a protection against sudden changes of the weather in winter.

Why do Hogs Eat Coal?—"H.," Reno Co., Kansas. Swine are intended by nature to get a portion of their subsistence from roots, and to dig these roots from the soil by means of their snouts, which are well adapted to this. In eating roots so procured, a large quantity of soil, or mineral matter, is swallowed, and it seems to be intended by nature that this should be done, as, when prevented from pursuing their natural bent, they evince a strong appetite for such things as coal, earthy substances, or even decayed wood. It is always healthful for hogs that are closely penned, to be supplied with soda, soft coal, or charcoal, moderately, but when they have been deprived of these for some time, caution should be observed lest they consume them to excess.

A Question of Manuring.—"R. C. M.," Olney, Ill. It is not always that the trouble and cost of composting manure will be repaid by the benefit gained. Sometimes it is cheaper in the end to spread manure as it is hauled through the winter on to the ground. Where land is flat the danger of washing is very little or nothing, except under unusual circumstances. As to this, judgment should be exercised. Unless it is very clear that a gain is to be made by laborious composting, that course is not advisable; it is better to cart the manure directly on to the land, and spread it at once; not leaving it in piles more than a day or two at the utmost. When manure can be had plentifully for the hauling, it will not pay to compost it. That is only a device to increase the bulk of the manure when it is scarce and costly.

How to Keep a Hydraulic Ram at Work.—"J. A. G.," Lewisburg, Pa., writes that if a small air-hole is made in the feed pipe of a water ram, about two inches in front of the ram, there will be no stoppage on account of want of air in the air-chamber. He has had a ram at work for 30 years without ever a stop from this cause, except when back-water covered the hole. If the hole is too large, it may be made smaller by tapping around it with a riveting hammer.

Cheese Factory in New Jersey.—"F. F.," Woodstown, N. J. We do not remember of any cheese factory in the State of New Jersey, excepting those in which "foreign" cheese is made, or rather imitations of a French and other European cheeses. Doubtless there are openings for such factories in many parts of the State. The capital required for a small factory is not heavy. The building need not be expensive; the machinery can be furnished complete by Whitman & Burrell, of Little Falls, N. Y., who would give estimates on application. See articles in February number.

To Repair an Old Chain-Pump.—"S. W.," Mineola, L. I., gives the following plan for mending an old chain-pump that will not raise the water. First take a stout cord; make the chain fast, so that it cannot drop down the cistern or well, then unlink one of the bucket-links, take the heel of an old India-rubber boot, or some rubber packing; cut a hole through the rubber, press one eye of the bucket-link through sufficiently far to admit of linking again, and then with a sharp knife pare the rubber down sufficiently small, so that it will exactly fit the trough; the round, penny-shape bucket will be a sufficient guide in cutting the rubber-bucket perfectly round. Then re-link the bucket upon the chain, and repeat this on every fourth bucket the entire length of the chain; it is unnecessary to put the rubber-buckets closer than every fourth one. Be careful that when putting the rubber-buckets back on the chain, that the old metal bucket shall be under the rubber one when entering the trough, so that it will be supported and held firm by pressure against the trough. Do this carefully, and your old pump is good for several years longer, and it will throw water faster than when new.

Economy in Cutting Feed.—"A. Q. McG.," Estes Park, Colorado. The economy in cutting feed consists in the prevention of the waste which occurs with long feed, and also in the less consumption. It is very certain that a less weight of long fodder, cut, moistened, and mixed with ground grain, will keep an animal in equally good condition as a larger quantity of uncut fodder with ground grain. This effect occurs in two ways; the animal exercises less muscular exertion in masticating the prepared food, and the food is more perfectly digested. We have found the saving to be from a fourth to a half with some animals that are of unusually wasteful habits, or of inferior digestive powers.

Value of Pond Sediment.—"H. T.," Milltown, N. B. The soil left by the draining of ponds is generally very valuable for meadow land. A pond that is filled with mud to within 6 inches of the surface, may doubtless be drained by cutting an outlet to carry off the water. The mud will settle considerably, and the drain may need to be 5 to 6 feet deep. As soon as the surface is dry, it should be sown with grass seed, lest bog grasses spring up and produce a growth of tussocks, which would spoil the surface. Open ditches should be cut through the ground as soon as the surface is solid enough to work upon. The reclamation of such land will require probably two years, if not more.

Spaying Sows.—"J. W. P.," Wells Co., Ind. There is no certain way of preventing sows from breeding except by spaying. There are different other methods proposed, but they are all shams and humbugs.

Pennsylvania Corn.—"C. C. E.," Waynesburg, Ohio. A very large and prolific variety of yellow corn is grown in Southern Pa. We have grown it, having 32 rows, and shelling nearly a quart to each ear. But it requires very rich soil and a climate equally warm as that where it originated.

Concrete for Cellar Walls.—"T. E. W.," Clinton Co., Ohio. Concrete makes a very strong cellar wall. It is stronger and better in every way when made with hydraulic lime (or cement), than with common lime, although a good concrete may be made with common lime. We have built walls of each kind of concrete, and much prefer the hydraulic cement.

Artesian Wells.—"J. L. B.," Greenland, W. Va. Water can not always be made to overflow from a well, however deep it may be. There must be an underground stream tapped, which has its source above the level of the mouth of the well, and the stream must be confined by an impervious bed of clay or rock. Unless these conditions exist, no flowing well can be had.

Plowing Under Green Crops.—"C. S.," Syracuse, N. Y. It is a great mistake to suppose that land too poor to grow anything, can be restored by growing and plowing under green crops. Green manuring is useful to keep good land in good condition without other manure. But to raise the condition of poor land in this way, would be to get something out of nothing. The easiest manner of restoring poor soil, is to use some artificial fertilizer to grow clover, and then plow under the clover.

Sulphate of Copper as a Tonic for Pigs.—"R. L. C." Sulphate of copper, properly used, is a valuable tonic for animals. The proper quantity is from half a dram to two drams for a horse, ox, or cow; 10 grains to a sheep, and 15 grains for a pig. It is poisonous when given in large quantities, as are almost all medicinal drugs. Sulphate of iron (copperas) is less active than the sulphate of copper (blue vitriol), and is used in doses four times as large. It requires a knowledge of the case to distinguish the need for the one or the other of these drugs.

To Split Knotty Logs.—"B.," Cheshire Co., N. H., writes: Take a six or seven-quarter auger for large, tough, knotty logs that are to be split. Bore into the log you wish to open, for one-third or one-fourth its diameter, put in a good charge of powder. Take a piece of wood six or eight inches long, suitable to make a spile or plug—pine is the easiest to work, and the best—run a 3/10 bit through the tap—that is, to be fitted to drive tight and firmly to the charge—then prime and set a match that will give time to get out of the way.

Nuts and Nubbins.

"Sealskin sacks are worn longer." Same way with all the rest of our clothes.

When a man has no bills against him he feels as though he belonged to the nobility.

"How's your husband this evening, Mrs. Quagga?"—"No improvement, doctor, one way or the other."

A little boy went to his father crying, and told him that he had kicked a bee that had a splinter in its tail.

Among the items in a plumber's bill are: to searching gas leakage, fifty cents; to having found it, one dollar.

"I'ze right," shouted a military officer to his company. "Well," grunted a green private, "nobody said you wasn't right."

A young housekeeper, when her attention was called to a very dusty chair, remarked: "Nobody has sat down on that to-day."

A Rochester man hung a sign in front of his place of business, which reads: "Twenty-five loafers wanted to stand here." They don't stand there.

"Nice little girl: "Oh, do let me see you drink."—Captain Grogson: "Why, my dear?"—Nice little girl: "Because ma says you drink like a fish."

Some Indians use scalping knives of tortoise shell, probably on account of the old fable in which the tortoise was alleged to have got away with the hare.

"A polite man," said the Duc de Morny, "is one who listens with interest to things he knows all about when they are told by a person who knows nothing about them."

A mother seeing her little four-year-old nearly asleep in her chair, asked if she had not better go to bed.—"Oh, no, mamma; I only shut my eyes to keep the dust out."

"How does the new cow answer?" asked one man of another who had lately purchased a cow.—"I really can't say," he replied, "for I've never asked her any questions."

"My dear," asked Mrs. J. of her husband, on coming home from church the other day, "what was the sweetest thing you saw in bonnets?"—"The ladies faces," was the bland reply.

Physician—"Your pulse is still very high, my friend! Did you get the leeches all right day before yesterday?"—*Patient*—Yes, sir, I got 'em right enough; but mightn't I have 'em biled next time?"

The following conversation took place recently in an hotel:—"Waiter."—"Yes, sir."—"What's this?"—"It's bean soup."—"No matter what it has been; the question is, what is it now?"

A Boston paper says: "A butterfly was caught at the South End yesterday."—It may be safe enough to catch a butterfly at the South End, but when you go to grab a wasp you want to catch it at the northeasterly end, shifting westerly toward the head.

"Ma," said a thoughtful boy, "I don't think Solomon was so rich as they say he was."—"Why, my dear, what could have put that into your head?"—"Why, the Bible says he slept with his fathers; and I think if he had been so rich, he would have had a bed of his own."

When you see a lady on the street stop and suddenly kick and reach backward and downward, don't be alarmed; it is not a brickbat she is after. As soon as she shakes out the old oyster cans entangled in her trail, that same sweet smile will return; and everywhere the street contractor hails the woman with a trail as a blessing.

A gentleman who happens to own a paddock, and who had tried every effort and threat in vain to prevent tramps from making a short cut through it, was eventually persuaded to stick up the following notice: "Beggars, Beware! Scolopendriums and Polypodiums planted here." The effect was marvellous, and the annoyance ceased.

The young ladies of Vassar College feel quite at home in studying chemistry. They are at once on friendly terms with Sal Ammoniac, Sal Soda, Sal Prunelle, Mag Nesium, Moll Ybdenum, Ann Timony, Cad Mium, Ruth Enium, Pete Roleum, Al Uminum, Doll O'Mite, Bessi Mer's Process, Mary Otto's Law, and Ann Alysis.

A young man, on becoming affianced, was desirous of presenting his intended with a ring appropriately inscribed; but, being at a loss what to have engraved upon it, he asked his father's advice. "Well," said the old gentleman, "put on, 'When this you see, remember me.'" The young lady was surprised, upon receipt of the ring a few days after, to read this inscription: "When this you see, remember father."

Mr. Basingbal (city merchant)—"Most convenient! I can converse with Mrs. B. just as if I was in my own drawing-room. I'll tell her you are here." (Speaks through the telephone.) "Dawdles is here—just come from Paris—looking so well—desires to be," etc., etc. "Now you take it, and you'll hear her voice distinctly."—Dawdles—"Weally!"—(Dawdles takes it.)—The voice—"For goodness sake, dear, don't bring that insufferable noodle home to dinner!"

Family Cider and Wine Mills, $15 and upwards. Union Cider Mill; makes very soft adhesive pomace. $30.
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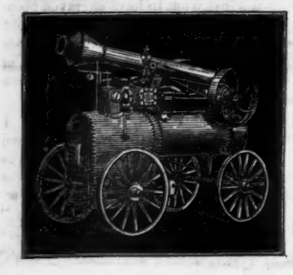

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THE ORIGINAL & ONLY GENUINE
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WITH IMPROVED
MOUNTED HORSE POWERS,
And Steam Thresher Engines,
Made only by
NICHOLS, SHEPARD & CO.,
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THE Matchless Grain-Saving, Time-Saving, and Money-Saving Threshers of this day and generation. Beyond all Rivalry for Rapid Work, Perfect Cleaning, and for Saving Grain from Wastage.

GRAIN Raisers will not Submit to the enormous wastage of Grain & the inferior work done by the other machines, when once posted on the difference.

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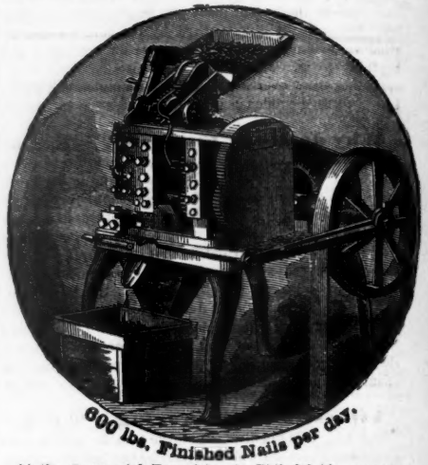

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Recommended for an Award of Merit.

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CHARLES STAPLES, Portland, Me.,
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DAV. McHARDY, Aberdeen, Scotland,
T. DIEFENBACH, Germany,
} Group Judges XV.

We annex a sample of the testimonials we receive daily from all parts of the country:

ST. LOUIS, MO., June 8, 1877.

GLOBE NAIL CO., BOSTON, MASS.

Gentlemen: Find enclosed advertisement and postal card concerning your Nail. [Referring to a scurrilous advertisement and postal card, disparaging the Globe Nail, circulated by a rival manufacturer over the humbug signature of "Humane Society for the Prevention of Cruelty to Animals." No Society bearing that title ever existed.] As I take a great interest in the prevention of cruelty to animals, —horses in particular,—I desire to say a few words in favor of **The Globe Nail.** Though I am not a very extensive Horse Shoer, yet I have used enough Nails of the different makes to speak knowingly. I have used the Globe Nail in my shop and on the race track for six years, on all classes of horses, from the heavy draft horse to the tender footed running horse; and I can safely say **it has no superior in point of Toughness, Shape, and Finish, if it has any equal.** I have used about fifteen hundred pounds of Globe Nails a year for the last six years, and in that time I have found four imperfect Nails, two of which I returned to you about two years ago and received in return four perfect ones, for which accept my thanks. If my men had no better sense than to drive those imperfect Nails in a horse's foot, I would not consider it the fault of the Nail if the horse was lamed. If bosses would look more to the competency of their men and less to trying to get shoeing nails a few cents a pound cheaper, we would have fewer lame horses. **I know for safety and durability, with a man who understands his business to drive them, your Nails can't be beat!** I am willing to pay, without any suit, for all horses that are lamed in my shop by using the Globe Nail. As long as it is made as at present, I shall continue to use it, even if I could get other Nails for nothing. I consider it the safest Nail that was ever driven in a horse's foot.

Yours Very Respectfully,
(Signed,) P. H. O'NEILL,
Horse Shoer, No. 1007 Broadway.

P. S.—I think I could get every boss in St. Louis to sign this if I thought it necessary. P. H. O'N.

The best Horse is sure to win. SO CLEAR THE TRACK FOR THE

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Grade Jersey Heifers and Cows of all ages, from two weeks to seven years old. I have nearly 100 head to select from. All my stock is bred expressly for their butter qualities, and no calves are raised from dams that do not yield 9 lbs. or more of splendid butter per week, when fresh. All orders requiring me to select for purchasers are solicited at once, as I shall fill them in turn as received, but I much prefer that purchasers examine for themselves. Terms reasonable. Apply at once to THOMAS FITCH, New London, Conn.

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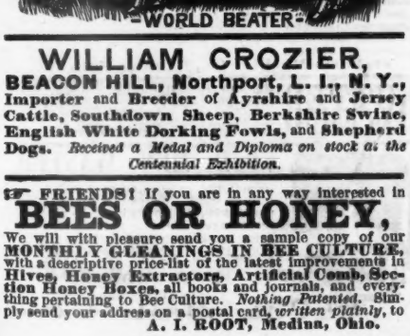
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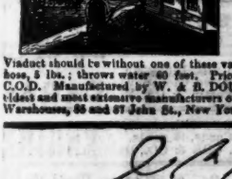

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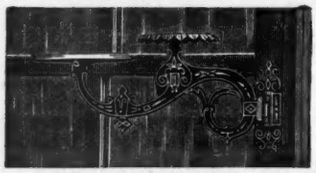

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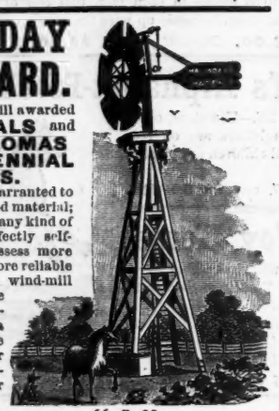
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